

INDEX OF SUBJECTS

ABSTRACTS A and B, 1931.

An asterisk denotes a previous abstract. Patents are marked (P.)

A,

Abderhalden reaction, A., 123, 124.
 Abietic acid, oxidation of, A., 736.
 with mercurio acetate, A., 227.
 derivatives of, A., 1414.
 Aborigines, Australian, metabolism of. See under Metabolism.
 "Abrasinol" (*Indo-Chinese wood oil*), detection of castor and arachis oils in, B., 169.
 Abrasion resistance, measurement of, B., 308.
 Abrasives, manufacture of, (P.), B., 633.
 aluminous, (P.), B., 760.
 Abrasive articles, (P.), B., 65.
 manufacture of, (P.), B., 202*, 1011, 1045.
 composition for, (P.), B., 884.
 bonded, manufacture of, (P.), B., 720, 729.
 Abrasive implements, (P.), B., 248.
 Abrasive materials, steel, production of, (P.), B., 424.
 Abrasive wheels, manufacture of, (P.), B., 806.
 Absorption apparatus. See Gas absorption apparatus.
 Absorption jump, formula for, A., 665.
 Absorption spectra. See under Spectra.
 Abutilon, chlorosis-infected leaves of, A., 1102.
 Abutilon *avicennae*, relation between assimilation and anthocyanin formation in, A., 660.
 Abutilon oil, B., 31.
 d-Acacatechins, stereoisomeric, and their penta-acetyl derivatives, A., 738.
 Acacias, dye from wood of, A., 738.
 cutch-producing, maclurin in sapwood of, A., 1100.
 Acanthite, crystal structure of, A., 789.
 Accumulators, (P.), B., 123, 641.
 cover for, (P.), B., 815.
 electrodes for, (P.), B., 498.
 cathodes for, (P.), B., 726, 892.
 grids for, (P.), B., 1017.
 effect of antimonial lead in, B., 497.
 partition walls for, (P.), B., 449, 683.
 liquids for, (P.), B., 849*.
 prevention of loss of electrolyte from, (P.), B., 892.
 lead, working of, B., 981.
 non-sulphating, B., 682.
 zinc-lead, (P.), B., 640.
 Acenaphthanaphthazine, 3-bromo- and 3-chloro-, A., 632.
 Acenaphthanaphthazine-5'-sulphonic acid, 3-bromo- and 3-chloro-, A., 632.
 Acenaphthaphenazinazine, 3-bromo- and 3-chloro-, A., 632.
 Acenaphthaphenazine, 3-chloro-, A., 632.
 Acenaphthathiazine, 3-bromo- and 3-chloro-, A., 632.
 Acenaphthene mercuri-chlorido and -hydroxide, A., 1435.
 Acenaphthene, 3-amino-, and its derivatives, A., 959, 1294.
 mono- and *di-*amino-, 1-bromo-, *mono-* and *di-*chloro-, 1-hydroxy-, 1-iodo-, *mono-* and *di-*nitro-, nitro-1-amino-, and 1-nitro-7:8-*dihydroxy*, and their derivatives, A., 82.
 5-bromothiol-, and 3-thiol-, and their salts, A., 611.

Acenaphthenes, manufacture of halogenated ketones from, (P.), B., 1041.
 Acenaphthene series, A., 81.
 Acenaphtheneacridine, A., 82.
 3'-Acenaphthene-2-azo-3-acenaphthenol, A., 82.
 Acenaphthene-3-diazonium chloraurate, A., 82.
 Acenaphthenedisulphonic acid, 1-amino-, A., 82.
 Acenaphthenequinone, dyes from, A., 632.
 thioindigotin from, A., 748.
 Acenaphthenequinone, 2-amino-, acetyl derivative, and its derivatives, A., 1284.
 Acenaphthene-3-sulphinic acid, A., 611.
 Acenaphthene-3-sulphonic acid, derivatives of, A., 611.
 Acenaphthenesulphonic acid, 1-amino-, A., 82.
 Acenaphthenetrisulphonic acid, A., 82.
 3-Acenaphthenylazoimide, A., 82.
 3-Acenaphthyl ethyl ketone, and its picrate and derivatives, A., 959, 1294.
 2-Acenaphthyl-3-methylindole, and its dipicrate, A., 959.
 Acenaphthyl-3-thiolacetic acid, and its sodium salt, and 5-bromo-, A., 611.
 Acetal, dielectric constant of, A., 894.
 Acetal, amino-, action of, on pyrogallolsulphonic acid, A., 618.
 Acetals, preparation of, A., 463, 933.
 toluene-*p*-sulphonic acid as catalyst in, A., 335.
 manufacture of, (P.), B., 1040.
 preparation of alkoxy-cyclohexenes from, A., 212.
 cyclic, manufacture of, (P.), B., 710.
 Acetaldehyde, formation of, by alkaline fission of proteins, A., 856.
 production of, catalytically, (P.), B., 621.
 from acetylene, (P.), B., 621, 666, 710, 917, 1003.
 from alcohol, (P.), B., 1085.
 from methane and carbon dioxide, (P.), B., 1132.
 polymerisation of, A., 1273.
 equilibrium of, with ethyl alcohol in presence of catalysts, A., 1135.
 oxidation of, A., 67.
 in air, A., 1372.
 gaseous, oxidation of, by oxygen, A., 572.
 inflammation of mixtures of air and, A., 1131.
 electro-reduction of, A., 178.
 condensation reactions of, A., 1037; (P.), B., 1040.
 action of, on carbohydrates, A., 1038.
 use of, in fruit storage, B., 513.
 metabolism of. See under Metabolism.
 detection of, B., 530.
 determination of, A., 662.
 Acetaldehyde, *dichloro-*, condensation of, with anisic acid and *p*-nitroanisole, A., 1054.
 with *p*-hydroxybenzoic acid, A., 1162.
 Acetamide, use of, in cryoscopy, A., 423.
 hydrolysis of, A., 175.
 disintegration of casein by, A., 373.
 mercury derivative, use of, as mercurating agent, A., 943.

- Acetamide, cyano-, condensation of, with $\alpha\beta$ -unsaturated esters, A., 964.
 with acetylenic ketones, A., 235.
 with $\alpha\beta$ -unsaturated ketones, A., 1427.
 hydroxymercuri-derivative, A., 944.
- Acetamides, substituted, determination of acetyl groups in, A., 856.
 cyano-, *N*-alkyl and *N*-aryl substituted, sodium derivatives of, A., 943.
- Acetanilide, action of phosphoryl chloride on, A., 1429.
- Acetanilide, amino-, hydrochloride of, and its chloro- and nitro-derivatives, and chloro-, chloro- and nitro-derivatives, A., 393.
pentabromo-, A., 725.
 4-bromo-2-amino-, and its derivatives, A., 851.
N-chloro-, activity coefficient of, in aqueous salt solutions, A., 566.
 action of, with *p*-toluenesulphonamide, A., 949.
 cyano-, hydroxymercuri-derivative, A., 944.
 oximino-, preparation of isatin from, A., 363.
p-thiocyano-, nitration of, A., 474.
- Acetanilides, chloro-, saponification of, A., 1241.
 fluoro- and fluorochloro-, and their derivatives, A., 1408.
- Acetanilide-*p*-sulphonyl chloride, and its derivatives, A., 1283.
- N*-Acetanilido-2-pyridone-5-arsinic acid, A., 1315.
- Acetic acid, catalytic synthesis of, (P.), B., 148.
 manufacture of, (P.), B., 150*.
 in the United States, B., 620.
 from acetaldehyde, (P.), B., 710, 965.
 from acetylene, (P.), B., 621.
 from alcohol, (P.), B., 385.
 by fermentation, A., 656; (P.), B., 40.
 aldehyde dismutation in, A., 394.
 from methyl alcohol and carbon monoxide, (P.), B., 579.
 from maize stalks, A., 1459.
 concentration of, (P.), B., 237, 1085.
 conductivity of mixtures of, with hydrogen peroxide, A., 434.
 ionisation constant of, A., 910.
 electrolysis of, A., 821.
 dielectric constant of, A., 895.
 vapour, heat of association of, A., 42.
 dissociation constant and activity of, in alkali and alkaline earth chloride solutions, A., 308, 1368.
 effect of neutral salt on dissociation of, A., 168.
 adsorption of, by active carbon, B., 459.
 solutions of salts in, A., 683.
 equilibrium of, with acetic anhydride and water, A., 40, 1234.
 and its ethyl ester, A., 431.
 anodic oxidation of, A., 179.
 decomposition of, in presence of silica gel, A., 334.
 formation of citric acid from, A., 1333.
 Raman spectra of derivatives of, A., 1353.
 relation between ultra-violet absorption and structure of derivatives of, A., 1269.
 influence of substitution on colloid-chemical and disinfective properties of derivatives of, A., 396.
 action of moulds on, A., 394.
 poisoning by. See under Poisoning.
 glacial, determination of water in, by thermometric titration, B., 1003.
 detection of, A., 335, 601.
 determination of, in admixture with butyric and propionic acids, A., 1395.
 determination of formic acid in, volumetrically, B., 530.
- Acetic acid, aluminium salt, properties of solutions of, B., 1009.
 compounds of, with aluminium bromide and chloride, A., 1020.
 ammonium cupric and cupric salts, solubility of, in acetic acid, A., 683.
 calcium salt, gels of, A., 427.
 chromium salt, preparation of, B., 348, 802.
 copper salt, preparation of, B., 18.
 basic cupric salt, production of, (P.), B., 156.
 ferric salts, complex ions in, A., 168.
 lead subsalt, determination of lead in, B., 675.
 basic lead salt, analysis of solutions of, A., 1385.
 lead salts, neutral and basic, distinction between, A., 328.
 potassium salt, electrolysis of solutions of, A., 1371.
 rare-earth salts, A., 1020.
 silver salt, solubility and activity of, in concentrated salt solutions, A., 566.
- Acetic acid, sodium salt, crystallisation of, A., 1239.
 anhydrous, crystallisation of, A., 1005.
 commercial theophylline compound of, B., 862.
 determination of, A., 1261.
 determination of theophylline in theophylline compound of, B., 862.
- Acetic acid, *enol*-esters, structure of, A., 1419.
 allyl and vinyl esters, action of phenols on, A., 1288.
 amyl ester, in photographic sensitometry, B., 224.
 $\alpha\beta$ -dibromoamyl and δ -bromo- $\Delta\delta$ -pentenyl esters, A., 1392.
 δ -bromo- $\Delta\delta$ -pentenyl ester, A., 933.
 ζ -chlorohexyl ester, A., 1032.
 dichloro-10-phenyl- and 2-methoxy-anthranyl esters, A., 1294.
 4-cyanomethylphenylundecyl ester, A., 1290.
 β -ethoxypropyl ester, A., 62.
 ethyl ester, viscosity of mixtures of piperidine with, A., 32.
 adsorption of vapour of, by silica gel, A., 1227.
 ethylidene ester, manufacture of, (P.), B., 12, 1086.
 $\Delta\beta$ -heptenyl, $\Delta\beta$ -hexenyl, and methyl- $\Delta\beta$ -hexenyl and - $\Delta\beta$ -pentenyl esters, A., 1147.
 4-methylisobornyl ester, A., 625.
 5-nitrofurfuryl ester, A., 849.
 nitrophenacyl esters, and their derivatives, A., 1418.
 phenyl and thiophenyl esters, action of *o*-phthaloyl chloride on, A., 1292.
 β -phenylvinyl ester, A., 1050.
 $\alpha\beta\gamma$ -tetraphenyl- β -propyl ester, A., 948.
 triethyl ester, condensation of, with acetoacetic and malonic esters, A., 822.
 Δ^k -undecenyl ester, formation of *t*-hydroxydecanoic acid from, A., 1272.
 vinyl ester, manufacture of, (P.), B., 12.
 polymerisation of, A., 314, 1032.
 photo-polymerisation of, A., 1019.
- Acetic acid, amino-, ethyl ester, action of, with dextrose, A., 943.
 with cyclohexene oxide, A., 1154.
 derivative of, with hydantoin-3-acetic acid, A., 966.
 bromo-, poisoning by. See under Poisoning.
 and iodo-, inhibition of carbohydrate degradation by, A., 393.
 chloro-, *o*-chloroacetamidophenyl ester, A., 1289.
 ethyl ester, condensation of, with aldehydes and ketones, A., 604, 1415.
 with thiosemicarbazides, A., 634.
o-phenylacetamidophenyl ester, A., 615.
 dichloro-, preparation of, A., 710.
 trichloro-, influence of solvent on decomposition of, A., 573.
 action of, on cholesterol, A., 219.
 on ethyl diazoacetate in hydrocarbon solvents, A., 1375.
 as fixative in block staining, A., 755.
 β -acetoxy- and β -chloro-ethyl esters, A., 1395.
 benzyl and phenylethyl esters, A., 820.
 cyano-, action of, on triphenylcarbinol, A., 620.
p-bromobenzyl ester, A., 1392.
 ethyl ester, alkyl derivatives of, A., 1397.
 hydroxymercuri-derivatives, A., 944.
 trifluoro-, electrolysis of, A., 601.
 iodo-, action of, on cellular metabolism, A., 870.
 action of, on fermentation and respiration, A., 1091, 1190.
 prevention of glycolysis in blood by, A., 1320.
 sodium salt, action of, on enzymes of zymase, A., 263.
 effect of, on glyoxalase, A., 766.
 ethyl ester, combination of, with methylethylaniline, A., 81.
 thio-, use of, in esterification of alcohols, A., 713.
 4-chloro-2-acetamidophenyl ester, A., 349.
 thiol-, cobalt complexes of, A., 67.
- Acetic anhydride, pure, preparation of, A., 334.
 manufacture of, (P.), B., 148, 237, 334, 621, 1040, 1085, 1132.
 equilibrium of, with acetic acid, A., 40, 1234.
 reaction of, with citronellal oxime, A., 604.
 effect of solvent on acetylation of ethyl alcohol by, A., 1240.
 determination of, B., 104.
- 1-Acetimino-2-methyl-1,2-dihydrobenzthiazole, 5-fluoro-, A., 969.
- α -Acetin methyl ether, A., 206.
- Acetoacetic acid, fermentation of, by yeast, A., 1091.
 action of methylglyoxal on, A., 69.
 reaction of, with phenylglyoxal, A., 1293.
 ethyl ester, hydrogenation of, over nickel, A., 197, 693.
 use of calcium carbide in syntheses with, A., 712.
 condensations with, A., 464.
 action of sodium in, A., 1035.

- Acetoacetic acid, ethyl ester, condensation of, with β -hydroxy-ethylguanidine, A., 1074.
 with primary aromatic amines, A., 831.
 4-*p*-tolylthiosemicarbazone, A., 486.
 in the organism, and its detection, A., 381.
 detection of, in urine, A., 252, 381.
- Acetoacetic acid, α -chloro-, ethyl ester, reaction of, with thiosemicarbazides, A., 1170.
 cyano-, constitution of supposed ester of, A., 607.
 thio-, ethyl ester, synthesis of, A., 1037, 1398.
- Acetoacetic acids, ethyl esters, condensation of, with resorcinol, to form coumarins, A., 962.
 with phloroglucinol and resorcinol, to form coumarins, A., 962.
- Acetoacetoarylates, formation of, from ethyl acetoacetate and amines, A., 831.
- Acetoacetodiethylamide, A., 831.
- Aceto-*n*-amylamide, cyano-, and its hydroxymercuri-derivative, A., 944.
- Acetobacter xylinus*, formation of polysaccharides by action of, on carbohydrates, A., 826.
- Acetobenzylamide, cyano-, hydroxymercuri-derivative, A., 944.
- Acetobromogentiobiosido- α -D-glucose, A., 337.
- Acetobromo-*l*-rhamnose, action of trimethylamine on, A., 69.
- Acetobutylamide, cyano-, sodium derivative, A., 943.
- Acetobutylamides, cyano-, and their hydroxymercuri-derivatives, A., 944.
- 2-Acetocellobiosylquinalizarin, A., 826.
- Aceto-*p*-chloroanilide, chloro-, and its quinoline hydrochloride derivative, A., 1408.
- Acetochlorogentiobiose, A., 1041.
- Aceto-3-chloro-4-methylanilide, chloro-, A., 236.
- Acetodiethylamide, action of magnesium organic compounds on, A., 831.
- Acetodiethylamide, chloro-, action of magnesium ethyl bromide on, A., 77, 1279.
- Acetoethylamide, cyano-, hydroxymercuri-derivative, A., 944.
- 2-Acetogalactoxyanthraquinone, 1:8-*di*hydroxy-, A., 826.
- Acetoglucals, preparation of, A., 336.
- 8-Acetoglucosoxanthraquinone, 9-imonium salt, and its derivatives, A., 940.
- 2-Acetoglucosoxanthraquinone, 1-amino-, A., 940.
- Acetoglucosylalizarin, mono- and di-methylammonium salts, A., 940.
- 2-Acetoglucosylanthrarufin, hydroxy-, imonium salt of, A., 940.
- Acetoglucosylchrysazin, imonium salt from, A., 940.
- Acetoglucosylquinalizarin, derivatives of, A., 940.
- Acetohalogenosugars, action of mercury salts on, A., 72, 716, 1400.
- Acetoheptylamide, cyano-, and its derivatives, A., 943.
- Acetohexylamide, cyano-, and its hydroxymercuri-derivative, A., 944.
- Aceto-*p*-iodoanilide, chloro-, A., 236.
- Acetomesitylene, *m*-nitrobenzylidene derivative, A., 1060.
- Aceto- β -*m*-methoxyphenylethylamide, chloro-, A., 365.
- Acetomethylamide, cyano-, derivatives of, A., 943.
- Aceto- β -naphthylamide, *N*-chloro-, A., 45.
- Acetonaphthylamides, cyano-, derivatives of, A., 943.
- Acetone, manufacture of, (P.), B., 237.
 by fermentation, A., 877; (P.), B., 738.
 and butyl alcohol by fermentation, (P.), B., 86, 87.
 from acetylene, (P.), B., 666, 753.
 from primary alcohols, (P.), B., 621.
 from ethyl alcohol, (P.), B., 334, 666.
 from isopropyl alcohol, (P.), B., 194, 289.
 ultra-violet absorption spectrum of, A., 408.
 vapour, absorption spectrum of, A., 784.
 hydrolysis of, in ultra-violet light, A., 580.
 passage of continuous current through, A., 410.
 measurements of conductivity in, A., 434.
 partial pressure of vapour of, in inert gases, A., 677.
 composition and boiling point of aqueous mixtures of, A., 811.
 mixtures of carbon disulphide, water, and, A., 1365.
 decomposition of, in presence of silica gel, A., 336.
 in presence of zinc chloride, A., 68.
 reduction of, with lead-sodium alloy, A., 1274.
 and *p*-nitro- and *p*-nitrosophenol, catalytic reduction of, A., 1047.
 condensation of, with polyhydric alcohols, in presence of phosphoric oxide, A., 599.
 2:4:6-trichlorophenylhydrazones, A., 1046.
- Acetone nitrobenzenesulphonhydrazones, A., 610.
 1-phenyl- and 1-*o*-tolyl-carbohydrazones, A., 475.
 phenyl-*p*-chlorobenzylhydrazones, A., 938.
 piperidinoformyl-carbohydrazones hydrate and -hydrazones, A., 850.
 semicarbazones, action of piperidine on, A., 850.
 detection of, B., 530.
 in presence of acetaldehyde, A., 1273.
 in urine, A., 252, 381, 758.
 determination of, in urine, photometrically, A., 1082.
- Acetone, chloro-, action of, on dimagnesium dibromoacetylene, A., 937.
s-dichloro-, use of, in preparation of thiazoles, A., 103.
 cyano-oximino-, and its derivatives, A., 605.
*di*hydroxy-, methyl and ethyl ethers, A., 1274.
 α -*di*hydroxy-, preparation of, A., 825.
- Acetonedicarboxylic acid, condensation of, with phenols and phenolic ethers, A., 1055.
- Acetonitrile, and trichloro-, salts of, A., 609.
- Acetonitrile, amino-, sulphates of, A., 727.
- Acetylacetone, action of nitric acid on, A., 968.
- 2-Acetonyl-*trans*-hexahydrohydrindene-2-acetic acid, and its derivatives, A., 728.
- 2-Acetonyl-*trans*-hexahydrohydrindene-2-malonic acid, and its derivatives, A., 728.
- β -Acetonyl- Δ^7 -pentene- $\alpha\alpha$ -dicarboxylic acid, methyl ester, A., 1397.
- Aceto-*p*-phenetidine, syntheses of, A., 212.
 action of bromine and chlorine on, A., 477.
- Acetophenone, formation of, catalytically, A., 354.
 reactivities of ω -halogen atoms in, A., 1419.
 formation of oxonium salt in sulphuric acid solutions of, A., 485, 486.
 derivatives, ω -substituted, A., 1418.
 action of sodium hypochlorite on, A., 1156.
 benzeneazophenyl-, *p*-benzeneazophenylbenzyl- and benzyl-phenyl-hydrazones, and their derivatives, A., 476.
 piperidinoformyl-carbohydrazones and -hydrazones, A., 850.
 4-*p*-tolylthiosemicarbazones, A., 486.
- Acetophenone, *o*-amino-, derivatives of, A., 514.
 4-amino-2-hydroxy-, *p*-bromo-, bromo-3-amino-, and their derivatives, and 3-nitro-4-amino-, A., 1314.
 ω -bromo-, reaction of, with hydrazine hydrate, A., 1169.
 ω -bromo-*mw*-dinitro- and ω -iodo-*mono*- and -*di*-nitro, A., 1418.
 ω -chloro-, reaction of, with phenylhydrazine, and its derivatives, A., 1073.
 2:5-dichloro-, and its oxime, A., 1283.
aaa-trichloro-, A., 1050.
p-fluoro-, A., 945.
 α -hydroxy-, complex nickel salt, A., 486.
 ω -4-*di*hydroxy-, and ω -hydroxy-3:4-*di*hydroxy-, diacetyl derivative, and their derivatives, A., 1423.
 2:4:6-trihydroxy-, benzoylation of, and its derivatives, A., 963.
 thiocyanato-, derivatives of, A., 91.
- Acetophenone-*p*-arsenious oxide, A., 1315.
- Acetophenonearsinic acids, and bromo-, hydroxy-, and nitro-, and their derivatives, A., 1314.
- Acetophenoneoxime, *O*-tolylcarbonyl derivatives, A., 210.
- Aceto- β -piperonylethylamide, chloro-, A., 365.
- Aceto-*n*-propylamide, cyano-, hydroxymercuri-derivative, A., 944.
- Aceto-*o*-toluidide, amino-, A., 393.
- Aceto-*p*-toluidide, 2-amino-, *p*-toluenesulphonyl derivative, A., 99.
- Acetotoluidides, chloro-, and their quinoline hydrochloride derivatives, A., 1408.
 cyano-, and their derivatives, A., 943.
- Aceto-*p*-toluidides, amino- and chloro-, A., 393.
- Aceto-*p*-toluidide-2:5-disulphonyl chloride, chloro-, A., 1075.
- Aceto-*p*-toluididesulphonyl chloride, and chloro-, and their amides, A., 1283.
- Aceto- β -veratrylethylamide, bromo-, chloro-, and cyano, A., 365.
- 3-Acetoximinoacetyl furazan, 2-amino-, A., 605.
- 1-Acetoxy-2-acetoglucosoxanthraquinone-9-imine, imonium salt of, and its *N*-acetyl derivative, A., 940.
- Acetoxyanhydrohexan- α -one, hydroxy-, A., 68.
- α -Acetoxy-*p*-anisylacetonitrile, A., 616.
- o*-Acetoxybenzoic acid (*acetylsalicylic acid*; *aspirin*), crystal form and optical constants of, A., 1214.
 solutions of, in citrates, acetates, etc., B., 1121.
 hydrolysis of, in alcohol, glycerol and alcohol-glycerol solutions, B., 862.

- o*-Acetoxybenzoic acid, derivatives of, B., 1121.
 reaction of, A., 88.
 phenyl ester, reaction of, A., 351.
 determination of, titrimetrically, A., 638.
- β -Acetoxy- α -diethoxypropane, A., 600.
- Acetoxydimethoxypropanes, A., 599.
- 6-Acetoxy-2:3-dimethyl-1:4-pyrone, A., 1304.
- Acetoxyhydrides, cyano-, hydroxymercuri-derivatives, A., 944.
- 4-Acetoxy-3-methoxybenzylidenes, *mono*- and *di*-chloro-, *di*-acetates, and their derivatives, A., 90.
- 4-Acetoxy-3-methoxyphthalide, A., 500.
- 3:8-*endo*-3-Acetoxyethyl-2:4-tetrahydrophthalic anhydride, and its reduction product, A., 1426.
- 2-Acetoxy-naphthalene, 1-thiol-, and its *S*-picryl derivative, A., 723.
- 5-Acetoxy-*a*-naphthol, 2:6-*di*bromo-, and its benzoate, A., 217.
- 1-Acetoxy-2-naphthyl $\alpha\beta$ -*di*bromo- β -3:4-dimethoxyphenylethyl ketone, A., 963.
- p*-Acetoxyphenyl selenide and selenocyanate, A., 218.
- l*- α -Acetoxyphenylacetic acid, ethyl ester, A., 1291.
- 3-Acetoxy-3-phenyl-4:4-dimethyl-3:4-dihydrobenzopyrone, A., 340.
- p*-Acetoxypropenylbenzene, A., 953.
- Acetoxyisopropyl ether, A., 62.
- Acetyl halides, and bromo-, molecular compounds of, with hydroxyazo-compounds, A., 613.
- O*-Acetyl-2-acetoglucoxyanthrapyridone, A., 940.
- Acetylacetone, ferrous salt, A., 825.
- 4-*p*-tolylthiosemicarbazone, A., 486.
- 1-Acetyl-3-acetoxyindole, 6-bromo-, hydrate of, A., 468.
- 1-Acetyl-3-acetoxy-5-phenylpyrrole, A., 100.
- Acetyl-*d*-alanine, bromo-, A., 718.
 chloro-, A., 125.
- Acetyl-*dl*-alanyl-*dl*-leucine, bromo-, A., 718.
- Acetyl-*o*-aminobenzoic acid, chloro-, A., 124.
- Acetylaminobutyric acids, bromo-, A., 718.
- Acetyl-*dl*-asparagine, chloro-, A., 77.
- Acetyl-*l*-aspartic acid, bromo-, A., 718.
- Acetylation in aqueous alkaline solutions, A., 1269.
- Acetylbenzamide, *N*-chloro-, A., 124.
- 3-Acetyl-6:7-benzocoumarin, and its *p*-nitrophenylhydrazone, A., 494.
- 2-Acetylbenzthionaphthen-3-carboxylic acids, and bromo-, A., 1164.
- 1-Acetyl-1:2:3-benzotriazole, 4-bromo-, A., 851.
- Acetyl*apocaffeines*, A., 853.
- Acetylcannabinol, A., 625.
- Acetyliso-chavibetol, and its salts, A., 953.
- 3-Acetyl-5-*trichloro*acetyl-2:4-dimethylpyrrole, A., 494.
- Acetylcholine, influence of formaldehyde and, on alkaline reserve, A., 127.
 in ox-blood, A., 1080, 1320.
 salts, preparation of stable solutions of, (P.), B., 698.
 detection of, A., 1328.
 determination of, A., 606.
- Acetylcryptopyrrolecarboxylic acid, chloro-, A., 494.
- Acetyl-*l*-cystine, *di*bromo-, A., 718.
- Acetyldiglycyl-*dl*-alanyl-*dl*-leucine, bromo-, A., 718.
- Acetyldihydrodeoxytocic acid, A., 1065.
- 1-Acetyl-5:8-dihydro- $\alpha\beta$ -naphthacarbazole, and its oxime, A., 366.
- Acetyldihydronaphthapentindoles, and their derivatives, A., 366.
- 8-Acetyldihydro-pentindole, 5-chloronitro-, 5-nitro-, 5-nitro-9:10-dihydroxy- and 5:10-dinitro-9-hydroxy-, A., 1166.
- Acetyl-5:10-dihydrophenarsazines, 10-chloro-, A., 1316.
- 3-Acetyl-5:9-dimethyldecahydronaphthalene, and its derivatives, A., 1302.
- 5-Acetyl-2:4-dimethyl-3-ethylpyrrole, and *trichloro*-, A., 494.
- Acetyl-2:4-dimethylpyrrole, 3-bromo-5-*mono*- and *tri*-chloro- and 5-*trichloro*-, A., 494.
- 3-Acetyl-2:4-dimethylpyrroles, 5-hydroxy-, A., 968.
- Acetyl-2:4-dimethylpyrrole-5-carboxylic acid, 3-*trichloro*-, ethyl ester, A., 494.
- Acetyldiphenylacetic acid, derivatives of, A., 955.
- Acetyldiphenylamines, A., 1316.
- 3-Acetyldiphenylamine-6'-arsinic acid, A., 1316.
- 4-Acetyldiphenylamine-6'-arsinic acid, A., 1315.
- p*-Acetyldiphenylarsinic acid, and its semicarbazone, A., 1316.
- Acetyldi-*p*-toluenesulphonylhexose isopropylidene ether, A., 71.
- α -Acetyl-*n*-dodecoic acid, ethyl ester, A., 1094.
- Acetyldurenes, *tribromo*- and *trichloro*-, A., 1295.
- Acetylene, formation of, by electric discharge in mixtures of hydrogen and methane, A., 441.
 synthesis of, (P.), B., 1036.
 preparation of, from methane, (P.), B., 379.
 manufacture of, (P.), B., 102, 526, 662, 982.
 apparatus for, (P.), B., 662, 795.
 in the electric arc, (P.), B., 148.
 from methane, (P.), B., 959.
 barium carbide for, (P.), B., 62.
 feeding device for generators for, (P.), B., 710.
 materials for purification of, B., 467.
 storage of, (P.), B., 10.
 storage and transport of, (P.), B., 831.
 formation of copper carbide in cylinders of, B., 6.
 photochemical polymerisation of, A., 49.
 infra-red absorption spectrum of, A., 1352.
 ultra-violet absorption spectrum of, A., 409, 1110.
 Raman effect with, A., 409.
 electro-condensation of, by β -rays, A., 694.
 slow combustion of, A., 1015.
 avoidance of explosion risk in compression of, (P.), B., 620.
 explosions of electrolytic gas and, A., 689.
 explosion of mixtures of, with nitrogen and oxygen, A., 1015.
 explosion of mixtures of, with steam, A., 1015.
 ignition and propagation velocity in mixtures of oxygen and, B., 870.
 hydration of, (P.), B., 666.
 photochemical oxidation of, A., 1379.
 splitting of, (P.), B., 664.
 reaction of chlorine and, B., 796.
 action of nitric acid on, A., 194, 968, 1169.
 reaction of, with oxygen, A., 313.
 in presence of nitrogen oxides, A., 1133.
 condensation of, B., 524.
 addition of hydrogen bromide to, catalytically, A., 598.
 manufacture of additive products of halogen hydrides and, (P.), B., 289.
 purification of gases containing, (P.), B., 331.
 manufacture of ethylene from, (P.), B., 148.
 production of hydrocarbon oil from, B., 1033.
 effect of, on ripening of bananas, B., 992.
 derivatives, addition of hydrogen to, A., 358.
 chlorinated derivatives, preparation of, A., 597.
 sodium derivative, action of allyl halides on, A., 709.
 detection of, A., 819; B., 617.
 determination of, A., 1318.
 gravimetrically, in calcium carbide, B., 756.
- Acetylene, *dichloro*-, A., 932.
 additive compounds of, with ether, A., 932.
- Acetylene black, comparison of, with gas black and lamp black, B., 6.
- 9:10-*endo*Acetylenedicarbomethoxyanthracene, A., 849.
- 9:10-*endo*Acetylenedicarboxylic anhydrideanthracene, A., 849.
- Acetylenic compounds, constitution of, and Raman effect, A., 284.
 refraction of solutions of compounds with, A., 1412.
 influence of rate of reaction on halogen addition in, A., 932.
- Acetylenol in clove oil, B., 365.
- Acetylsocougenol acetoxybromide, A., 953.
- 6-Acetylflavone, 7-hydroxy-, A., 1305.
- Acetylfurazan, amino-, and its oxime, and their derivatives, A., 605.
- Acetylglucosamine, *N*-chloro-, A., 470.
- Acetyl-*d*-glutamic acid, bromo-, A., 718.
- Acetylglycine, bromo-, A., 718.
 chloro-, betaine derivative, A., 1311.
- Acetylglycylcholine salts, A., 943.
- Acetylglycyl-*dl*-alanyl-*dl*-leucine, bromo-, A., 718.
- Acetylglycyl-*dl*-leucine, bromo-, A., 718.
- Acetylglycyl-*dl*-valine, bromo-, A., 718.
- Acetylglyoxylcarbamide, A., 632.
- 9-Acetylhexahydrocarbazole, 6-nitro-10:11-*di*hydroxy-, A., 1166.
- 2-Acetyl-*trans*-hexahydrohydrindene-2-acetic acid, and its ethyl ester, A., 728.
- 1-Acetyl-3-hydroxy-5-phenylpyrrole, A., 100.
- 1-Acetyl-3-hydroxy-5-phenylpyrrole-2-carboxylic acid, A., 100.
- Acetylides, production of, (P.), B., 57.
- Acetylindole, 3-amino- and 2-chloro-, and their derivatives, A., 1429.
- Acetylindoxyls, hydrolysis of, B., 665.
- Acetylindoxyl acid, hydrolysis of, B., 665.

- Acetyl-leucines, chloro-, isomeric, A., 1270.
 Acetyl-*dl*-leucylglycine, bromo-, A., 718.
 Acetylmenthylamines, bromo- and chloro-, A., 229.
 4-Acetylmercapto-1-(*p*-dimethylaminostyryl)-2:5:6-dimethylbenz-thiazolium methosulphate, A., 1284.
 4-Acetylmercapto-1:5-dimethylbenzthiazole, A., 1283.
 Acetylmesitylene, dibromocyno- and cyano-, and their dinitro-derivatives, and dichlorocyno-, A., 833.
 3-Acetyl-2-methyl-1:4-benzopyrone, 7:8-dihydroxy-, and its derivatives, A., 1161.
 Acetylmethylcarbinol, production of, by fermentation, (P.), B., 177.
 3-Acetyl-4-methyl-2-trichloromethylpyrrole, 5-hydroxy-, and its acetyl derivative, A., 968.
 6-Acetyl-2-methylchromone, 7-hydroxy-, A., 1305.
 α -Acetyl- γ -methyl-*n*-heptioic acid, ethyl ester, A., 1309.
 Acetyl-2-methylindole, 3-dichloro-, and its derivatives, and 3-trichloro-, A., 630.
 Acetyl-3-methylindole, 2-amino-, and its derivatives, and 2-chloro-, A., 1429.
 Acetyl-3-methylindolylcarbinol, 2-chloro-, and its derivatives, A., 1429.
 ϵ -Acetyl- β -methyl- Δ^7 -pentene- $\alpha\alpha$ -dicarboxylic acid, methyl ester, A., 1397.
 3-Acetyl-2-methyl-4-propylpyrrole-5-carboxylic acid, ethyl ester, A., 747.
 5-Acetyl-2-methylpyrrole, and its derivatives, A., 739.
 Acetylmethylpyrrolecarboxylic acids, and their derivatives, A., 739.
 3-Acetyl-1:4-methylquinonitrole, 5-bromo- and 5-nitro-, A., 845.
 2-Acetyl-4-methylthionaphthen-3-carboxylic acid, 6-chloro-, and its ω -bromo-derivative, A., 1164.
 Acetylmonoses, A., 337, 938.
 Acetylnaphthalenes, bromo-, and their derivatives, A., 1156.
 1-Acetyl- β -naphthol oxime, A., 813.
 Acetyl-*p*-nitrotyrosine, chloro-, and its ethyl ester, A., 768.
 Acetylnornarcomethine, A., 969.
N-Acetylaponucidine, and its perchlorate, A., 855.
 Acetylphenarsazinic acid, A., 1316.
 Acetylphenylalanine, chloro-, betaine hydrochloride of, and its conversion into pyrrole derivatives, A., 1311.
 Acetyl-*d*-phenylalanine, bromo-, A., 718.
 Acetyl-*dl*-phenyl- β -alanine, chloro-, A., 768.
 γ -Acetyl- β -phenylbutyric acid, semicarbazone of, A., 1056.
 p -Acetylphenylchloroarsine, A., 1316.
dl-Acetyl- α -phenylethylamine, *p*-nitro-derivative, A., 937.
N-Acetylproline, amide of, and its acetyl derivative, A., 629.
 Acetyl-*l*-proline, bromo-, A., 718.
 3-Acetylisopropylidene-glucose, transformation of, A., 199.
O-Acetylpukeatine methiodide, A., 749.
N-Acetylpyrazole, and its picrate, A., 1168.
 3-Acetylpyridine, and its hydrochloride, A., 740.
N-Acetylpyrrolidinonitrile, A., 629.
 3-Acetylquinoline, oximino-, A., 1310.
 5-Acetylquinoline, 8-hydroxy-, and its benzoyl derivative, condensation of, with aldehydes, A., 741.
 and 8-hydroxy-5-chloro-, and their salts, A., 98.
 3-Acetylquinoline-2-carboxylic acid, ethyl ester, phenylhydrazone of, A., 1310.
 Acetylretene, and its derivatives, A., 1297.
 Acetylretenequinone, and its quinoxaline derivative, A., 1297.
 Acetylsalicylic acid. See *o*-Acetoxybenzoic acid.
 Acetylsporoin, A., 536.
 Acetyl- α -isostrophanthidolic acid, methyl ester, A., 827.
N-Acetylstrychnic acid, and its derivatives, A., 1312.
 Acetylsulphanilic acid, chloro-, A., 984.
 1-Acetyl-3-*O*-tetra-acetyl- β -glucosidoxymethylindole, 6-bromo-, A., 468.
N-Acetyltetrahydrobrucine, and its salts, A., 1312.
O-Acetyl-1:3:5:8-tetramethyl-2:4-di(hydroxymethyl)porphin-6:7-dipropionic acid, and its derivatives, A., 102.
 2-Acetylthionaphthen, A., 1164.
 2-Acetylthionaphthen-3-carboxylic acid, and ω -bromo-, A., 1164.
 3-Acetyl-*o*-toluic acid, oxime of, A., 484.
 5-Acetyl-3-*p*-toluoyl-4:6-diphenyl-2-methyl-1:4-dihydropyridine, A., 1165.
 9-Acetyl-1:3:7-trimethylspirodihydantoin, A., 853.
 Acetyl-2:3:4-trimethylpyrrole, 5-trichloro-, A., 494.
 Acetyltropic acid, β -1-piperidylethyl ester. See Navigan.
 Acetyl-*l*-tryptophan, bromo-, A., 718.
 Acetylmurethane, *p*-nitrophenyl- and phenyl-hydrazones, A., 496.
 Acetyl-*dl*-valine, bromo-, A., 718.
 Acetyl-*dl*-valylglycine, bromo-, A., 718.
 Acetyl-2-vanillylidenedihydro- β -naphthafuran-1-one, A., 737.
 Acetylzaxine, A., 1171.
 Acetyl- α -xenylamine, chloro-, A., 1308.
 Acid, $C_8H_{14}O_3$, from 1:3-dimethyl- Δ^1 -cyclohexene, A., 1303.
 $C_{10}H_{16}O_2$, and its derivatives, from autooxidation of piperitone, A., 95.
 $C_{10}H_{16}O_3$, and its semicarbazone, from ethyl 1:3-diketodecahydronaphthalene-4-carboxylates, A., 1303.
 $C_{11}H_{16}O_6$, and its derivatives, from oxidation of abietic acid, A., 736.
 $C_{11}H_{15}O_7N$, and its salts, from liver, A., 975.
 $C_{12}H_{14}O_6$, from oxidation of dihydrorotenolic acid, A., 227.
 $C_{12}H_{18}O_6$, and its derivatives, from oxidation of abietic acid, A., 736.
 $C_{13}H_{18}O_8$, from ozonisation of 5:8-dihydroxy-1-methyl-1:2:3:4-tetrahydroanthraquinone, A., 1298.
 $C_{14}H_{24}O_2$, from dihydroisocalantolactone, A., 1301.
 $O_{15}H_{22}O_8$, and its methyl ester, from alantolactone, A., 1301.
 $C_{16}H_{12}O_8$, and its derivatives, from oxidation of hydrocarbon $C_{17}H_{20}$, A., 232.
 $C_{17}H_{14}O_8$, from tetrahydrofluoranthene and sodium, A., 341.
 $C_{18}H_{18}O_6$, from maleic anhydride and resorcinol dimethyl ether, A., 1155.
 $C_{20}H_{28}O_4$, from oxidation of abietic acid, A., 227.
 $C_{21}H_{30}O_2N_2$, and its salts, from oxidation of tetrahydrostrychnine, A., 242.
 $C_{23}H_{32}O_2$, and its derivatives, from pyro- ψ -choloidanic acid and sodium hydroxide, A., 352.
 $C_{23}H_{26}O_4N_2$, and its perchlorate, from oxidation of *ON*-diacetyl-tetrahydrostrychnine, A., 242.
 $C_{24}H_{36}O_{11}$, from oxidation of 6-keto-5-hydroxydeoxybilianic acid, A., 352.
 $C_{27}H_{50}O_4P_2$, and its derivatives, from cholesterol phosphate, A., 481.
 $C_{32}H_{26}O_{12}Cl_4$, from xylindein, hydrogen peroxide and hydrochloric acid, A., 228.
 Acids, nucleus theory of, A., 149.
 purification of, electrolytically, (P.), B., 1092.
 vessels for containing, (P.), B., 1079.
 pumps for, B., 657.
 electrolytic dissociation of, in salt solutions, A., 1368.
 solubility of, in salt solutions, A., 431, 566.
 solution of metals in, A., 176.
 decomposition of, by anhydrous zinc chloride, A., 1034.
 strengths of, in two solvents, A., 1127.
 measurement of acidity of, in various solvents, A., 910.
 protein salts of, A., 856.
 acetylenic, and their esters, unsaturation phenomena of, A., 65.
 aliphatic, manufacture of, from alcohols, (P.), B., 385.
 and their esters, from carbon monoxide and alcohols, (P.), B., 149.
 by fermentation, (P.), B., 133.
 anhydrous, production of, from their solutions, (P.), B., 796.
 adsorption of, on evacuated charcoal, A., 1366.
 production of anhydrides and chlorides of, from their salts, (P.), B., 621.
 esters, action of sodium on, A., 464.
 additive compounds of, with boron trifluoride, A., 1404.
 chain effects in *l*-menthyl esters of, A., 1160.
 imide and amide chlorides of, A., 236.
 formation of complexes of, with ferric chloride, A., 168.
 carboxylic, reactions of, A., 710.
 halogenated, manufacture of anhydrides of, (P.), B., 965.
 higher, parachor of, A., 149.
 lower, concentration of, (P.), B., 1085.
 aromatic, adsorption of, on charcoal, A., 678.
 carboxylic, manufacture of arylamides of, (P.), B., 335.
 dibasic, titration curves of, A., 1126.
 polyhydroxy, manufacture of esters of, (P.), B., 476.
 polybasic, reaction of, with neutral salts, A., 799.
 carboxylic, manufacture of, from nitriles, (P.), B., 289.
 effect of hydrocarbon groups on, A., 1126.
 reduction of, by transformation of siloxen-acid derivatives, A., 1033.
 alkali salts, dissociation of, A., 1126.
 ethyl esters, electric moments of, A., 410.
 synthesis of quinoline compounds from arylamides of, A., 495.
 sulphonated, production of esters of, (P.), B., 918.
 dicarboxylic, electrolytic reduction of, A., 578.

- Acids, complex, physical chemistry of, A., 697, 911.
 fatty, formation of, from sugars, A., 605.
 transformation of, during geological periods, B., 4.
 of high molecular weight, and their anhydrides, synthesis of, A., 1395.
 refining of, from oxidation of paraffin wax, etc., (P.), B., 450.
 tests for purity of, B., 935.
 molecular layers of, A., 289.
 action of silent electric discharge on, B., 32.
 electromotive action of, A., 1084.
 dissociation constants and activity of, in sodium and potassium chloride solutions, A., 1369.
 adsorption of, by finely-divided carbon, A., 298.
 apparatus for distillation of, (P.), B., 71*.
 esterification of, (P.), B., 1106.
 catalytic hydrogenation of, (P.), B., 1146.
 sulphonation of, (P.), B., 684.
 action of sulphuric acid on, B., 850.
 of egg-yolk lecithin, A., 975.
 in tissues, A., 975.
 aluminium salts, swelling of, in organic solvents, B., 1017.
 metallic compounds of, (P.), B., 307.
 manufacture of derivatives of, (P.), B., 195.
 esters, manufacture of, with polyhydric alcohols, (P.), B., 125.
monobasic, melting point curves of, A., 552.
polyhalogenated, manufacture of, (P.), B., 149.
 higher, magnetic rotation of, A., 547.
 and their derivatives, sulphonation of, (P.), B., 71, 727.
 manufacture of derivatives of, containing nitrogen or sulphur, (P.), B., 355, 935.
 manufacture of oxidation products containing sulphur from, (P.), B., 1146.
 manufacture of sulpo-derivatives of, (P.), B., 450, 501.
 manufacture of basic products from, (P.), B., 334.
 esters, manufacture of, (P.), B., 385.
 dialkylaminoalkyl derivatives of, (P.), B., 667.
 unsaturated methyl esters, polymerisation of, A., 602, 1271.
 long-chain, surface potentials of unimolecular films of, A., 299.
 lower, glyceryl esters, A., 1269.
 mixed, titer points of, B., 595.
 saturated, production of, (P.), B., 684.
 solid, determination of, A., 935.
 sulphonated, esters, manufacture of, (P.), B., 501.
 manufacture of derivatives of, B., 596, 1106.
 unsaturated, and their derivatives, A., 1271.
 hardening of, B., 400.
 from oils, drying of, B., 1145.
 oxidation of, A., 1395.
 manufacture of water-soluble condensation products of, (P.), B., 684.
 esters, hydrogenation of, A., 711.
 methyl esters, polymerisation of, A., 197.
 solid, determination of, A., 935.
 volatile, anaerobic decomposition of, in human intestines, A., 113.
 analysis of binary mixtures of, A., 1078.
 identification of, A., 600.
 determination of, by partition between ethyl ether and water, A., 374.
 in mixtures, A., 1438.
 in soaps, B., 30, 400.
 determination of unsaponified oil in, B., 306.
 separation of, A., 822.
 hydroaromatic carboxylic, manufacture of, (P.), B., 1086.
 mixed, use of determinants for calculations on, B., 347.
 binary, magnetism of, A., 1118.
 organic, and their esters, manufacture of, (P.), B., 385.
 manufacture of, by fermentation, (P.), B., 563, 738.
 dissociation constants of, A., 801, 1012.
 adsorption of, by platinum black, A., 420.
 and bases in non-aqueous solutions, A., 568.
 inhibition of decomposition of, by sulphuric acid, A., 317.
 measurements of taste of, A., 259.
 catalytic alkylation of, (P.), B., 105.
 crystalline, determination of equivalent weight of, A., 821.
 salts, degradation of, by *Aspergillus fumigatus*, A., 465.
 alkali salts, manufacture of, (P.), B., 796.
 vinyl esters, production of, (P.), B., 475.
 isomeric, enzymic esterification of, A., 874.
 Acids, organic, phenyl-substituted, bactericidal power of, A., 1095.
 volatile, determination of, in sulphuric acid solutions, B., 391.
 determination of, A., 1395, 1438.
 phenolic, use of, in analysis of metals, A., 813.
 strong, determination of, micro-volumetrically, A., 1256.
 strong and weak, effect of voltage on conductivity of, A., 1012.
 unsaturated, selective hydrogenation of, and their constitution, A., 601.
 $\alpha\beta$ -unsaturated, esters, addition of sodium enol alkyl malonates to, A., 67.
 weak, complex formation in, A., 1233.
 electrolytic dissociation of, A., 307.
 dissociation constants of, A., 308.
 influence of carbonic acid in conductometric titration of, A., 1256.
 detection of, A., 925.
 determination of, by titration in benzene, A., 584.
 Acids, *dithio*-, action of silver sulphate on, A., 713.
 Acid chlorides, action of hydrogen sulphide on, A., 86.
 Acid anhydrides. See Anhydrides, acid.
 Acidimetry, test of standards for, A., 450.
 Acidosis, A., 113.
 Acoine, amyostatic action of, A., 764.
 Aconine, chasmanthum, and its hydrochloride and derivatives, A., 636.
 Aconiteins, preparation of, A., 1426.
 Aconitine, pharmacology of solutions of, A., 120.
 chasmanthum, and its salts and derivatives, A., 636.
Aconitum chasmanthum, aconitine from, A., 636.
 Acraldehyde (*acrolein*), manufacture of, (P.), B., 710.
 acetal, preparation of, A., 824.
 Acridarsinic acid, A., 751.
 Acridine, A., 965, 1430.
 structure of shared-resonators in, A., 1351.
 salts, manufacture of stable solutions of, (P.), B., 515.
 derivatives, manufacture of, (P.), B., 823, 1133.
 Acridines, manufacture of double salts of, (P.), B., 698, 834.
 Acridine, 9-amino-, production of basic nitro-derivatives of, (P.), B., 179*.
 9-cyano-, and 4-nitro-9-cyano-, A., 965.
 1:3-dinitro-, A., 731.
 Acridines, 3:7-diamino-, manufacture of alkyl derivatives of, (P.), B., 622.
 Acridine bases, 9-amino-, manufacture of soluble salts of, (P.), B., 179.
 Acridine-9-carboxylic acid, 4-nitro-, and its derivatives, A., 965.
 Acridinedisulphonic acid, 9-amino-, A., 965.
 Acridone, nitration of, A., 1430.
 Acridone dyes, vat, manufacture of, (P.), B., 196.
 Acridone-1-carboxylic acid, 7-nitro-, A., 1430.
 9-Acridylcarbamidic acid, and 4-nitro-, derivatives of, A., 965.
 Acrylamide, $\alpha\beta$ -trichloro-, crystallography of, A., 415.
 Acrylic acid, polymerisation of, A., 1270.
 esters, production of, from β -chloropropionic acid esters, (P.), B., 1003.
 Acrylic acids, substituted, A., 934.
 Actinium, origin of, A., 890, 1145.
 adsorption of, on barium sulphate, A., 421.
 Actinium-A, recoil atoms of, A., 783.
 Actinium-C, emission of α -particles from, A., 1349.
 Actinium series, α -particles from, A., 995.
 Actinometers, oxalic acid-uranylacetate, use of, in measurement of photochemical changes in gasoline, A., 1019.
 Actinon, magnetic spectrum of α -rays from, A., 995.
 recoil atoms of, A., 783.
 Activator-Z, A., 128, 263, 523, 875.
 Activity coefficients, calculation of, from solubility measurements, A., 40.
 of electrolytes, A., 309.
 of organic solutes, A., 566.
 Acyl radicals, mechanism of migration of, A., 820.
 migration of, from sulphur to nitrogen, A., 348.
 Acylamino-acids, halogeno-, stereoisomeric, elimination of halogen from, A., 1150.
 Acylanilines, nitration of, A., 1151.
 Acyldiarylhydrazine series, A., 476.
 Acyldiurethanes, and their reactions with amines and ammonia, A., 830.
 Acyloins, A., 1457.
Adenanthera pavonina, lignoceric acid from seeds of, A., 1199.
 Adenine nucleotides, animal, A., 1178.

- Adenocarcinoma**, rat's, lipid fractions of, A., 1444.
Adenosinephosphoric acids, action of, on dehydrogenase, A., 122.
Adenosinepyrophosphoric acid, preparation of, from muscle, A., 860.
Adenylic acid and co-enzyme, A., 1191.
 of muscle and yeast, A., 860.
 liberation of phosphoric acid from, in contraction of muscle, A., 386.
Adhesives, (P.), B., 171*, 452, 506, 855.
 manufacture of, from rubber, (P.), B., 645, 1147.
 from rubber emulsions, (P.), B., 173*.
 from rubber latex, (P.), B., 1109.
 dry, (P.), B., 645.
 liquid, (P.), B., 687.
 vegetable, manufacture of, (P.), B., 772.
 for non-porous articles, (P.), B., 113.
 for wood, B., 505.
Adhesive tape, manufacture of, (P.), B., 532.
Adipic acid, dimethylammonium hydrogen salt, A., 204.
Adipodiethylamide, A., 830.
Adipoheptadecylamic acid, and its derivatives, A., 77.
Adipyldiphenylcarbamide, A., 830.
Adipyldinrethane, A., 830.
Adonis vernalis, 2:6-dimethoxy-*p*-benzoquinone in, A., 274.
Adrenal glands, preparation of extracts of, A., 987.
 action of pain stimuli on secretion of, A., 1452.
 synthesis of glutathione in, A., 642.
 influence of, on residual nitrogen, A., 987.
 mammalian, chemistry of, A., 755.
Adrenaline (*suprarenine*; *epinephrine*), formation of, in suprarenal glands, A., 1193.
 and its derivatives, effect of ultra-violet light on, A., 1336.
 effect of ultra-violet light on pressor action of, A., 1193.
 potential of, A., 1013.
 electrodialysis of, A., 1096.
 inactivation of, by formaldehyde, A., 268.
 use of, as oxidation catalyst, A., 338.
 manufacture of analogues of, (P.), B., 1121.
 as a true hormone, A., 127.
 calorigenic action of, in frogs, A., 1194.
 influence of, on alkaline reserve, A., 127.
 on sugar in bile, A., 397.
 on blood pressure in parathyroidectomy, A., 397.
 on blood-calcium, A., 1461.
 on blood-sugar, and its inhibition by colloidal silver, A., 127.
 on liver-sugar, A., 1461.
 on distribution of glycogen, A., 764.
 on lipins of blood and organs, A., 657.
 on proteases in blood and urine, A., 771.
 on distribution of sugar in the organism, A., 128.
 on tissue oxidation, A., 268.
 relation between sensitivity to, and blood cholesterol, A., 1096.
 liberation of dextrose in depancreatised animals by administration of, A., 1336.
 action of insulin on secretion of, A., 1096.
 antagonism between insulin and, A., 528.
 action of insulin and, in frogs, A., 1194.
 on blood-acetone and -sugar, A., 879.
 antagonism between sulphur and, A., 879.
 antagonism of thymus extracts and, A., 1193.
 in suprarenals in scurvy, A., 760.
 detection of, colorimetrically, A., 1438.
 biologically, in drugs, A., 397.
 determination of, colorimetrically, A., 1318; B., 89.
 in adrenals, A., 1096.
 in suprarenals, A., 987.
Adrenalone, detection of, colorimetrically, A., 1438.
Adsorbents, production of, B., 141.
 from flue dust, (P.), B., 142*.
 from peat, (P.), B., 470.
 revivification of, (P.), B., 142*, 911.
 powdered, determination of particle size of, A., 678.
 silicate, manufacture of, (P.), B., 804.
Adsorption, A., 419, 420, 981.
 theory of, A., 161, 297.
 measurement of, by the bubble method, A., 558.
 Boedeker's equation for, A., 161.
 in relation to dipole moments, A., 421.
 heat economy in, (P.), B., 657.
 isotherms of, A., 558, 1005, 1225.
Adsorption, activation energy and velocity of, A., 298, 421.
 intensity of, B., 277.
 inversion effect of, A., 421.
 measurement of time of, A., 34, 161.
 solubility in, A., 904.
 and capillary condensation, A., 1121.
 base exchange in, B., 375.
 quantum mechanics of catalysis in, A., 576.
 at surfaces, A., 1226.
 at solution surfaces, A., 1366.
 at boundary of three phases, A., 1228.
 relation between phase boundary potential, surface tension, particle size and, A., 300.
 and surface energy at phase boundaries, A., 1121.
 in binary systems of electrolytes, A., 904.
 of weak electrolytes from neutral salt solutions, A., 1121.
 of gases, A., 1120; (P.), B., 371.
 electrical condition of hot surfaces during, A., 1006.
 in an air stream, kinetics of, A., 1228.
 by porous solids, A., 558.
 of organic solutes, A., 566.
 of solutes by crystals, A., 904.
 in chemical processes, A., 426.
 in hydrated and dehydrated states, A., 1121.
 from liquids, calculation of equilibrium concentrations in, A., 1227.
 on mercury, A., 1119, 1120.
 by precipitates, A., 559.
 by coagulating precipitates, A., 422.
 motion of molecules in, on solids, A., 903.
 in colloidal solutions, A., 1123.
 in dilute non-aqueous solutions, A., 1227.
 in ternary solutions, A., 794.
 in relation to physiological phenomena, A., 979.
 activated, A., 1226.
 anomalous, Kroecker curves for, A., 1227.
 asymmetric, A., 794.
 inner, in crystalline salts, A., 1121.
 true, calculation of, A., 1121.
Adsorption apparatus, A., 593.
 removal of layers of adsorbents from, (P.), B., 999.
Adsorption compounds, A., 559.
Adsorption layers, rigidity of, A., 161.
Aëration apparatus, (P.), B., 95.
Aërobacter, growth of, A., 1458.
Aërobacter faeni, growth of, on sugars, A., 1458.
Aërogels, coherent expanded, A., 683.
Aërometer, for determination of density of liquids, A., 592.
Aeroplanes, control of cotton boll worm in, B., 269.
Aërosols, highly-charged, A., 1008.
Æsculetin glucoside, and its derivatives, A., 738.
Æsculin, A., 1400.
 constitution of, A., 73.
 and its methyl ether, A., 606.
Æsculus hippocastanum, effect of light on opening of, A., 534.
Ætioham, A., 634.
Affinity, A., 685, 1106, 1127, 1128, 1215, 1356, 1380.
 thermodynamics of, A., 559.
 residual, and co-ordination, A., 234, 1168.
Agar-agar, decomposition of, by aërobic bacteria, A., 1458.
 gels, testing of, B., 600.
 eosin-methylene blue and ferrocyanide-citrate, for testing micro-organisms, A., 1192.
Agaric acid. See *r*-Cetylcitric acid.
Agaricus campestris, lignin as nutrient for, A., 1200.
 decomposition of manure by, B., 1113.
isoAgathene, dihydroxy-, A., 359.
isoAgathic acid, hydroxy-, methyl ester, A., 359.
Agathidicarboxylic acid, dehydrogenation and isomerisation of, A., 231.
isoAgathidicarboxylic acid, and its dimethyl ester, A., 232.
***n*- and iso-Agathidicarboxylic acids**, esters, Bouveault reduction of, A., 359.
Aggregates, grading of, B., 950, 973.
Agglutination, specific, A., 249.
Aglucone, and its derivatives, from acacia wood, A., 738.
 and its diacetyl derivative, from *Linaria vulgaris*, A., 738.
Aglucones from genistin, A., 1304.
Agricultural produce, drying of, (P.), B., 270.
Agricultural wastes, utilisation of, B., 604.

- Agriculture**, field experiments in, B., 458.
- Air**, apparatus for production of mixtures of ammonia and, (P.), B., 157*.
- purification of, (P.), B., 568, 656, 864.
- separation of constituents of, (P.), B., 281.
- removal of ammonia from, (P.), B., 138.
- removal of carbon dioxide from, with active charcoal, B., 839.
- cleaners for, (P.), B., 1030.
- filters for, (P.), B., 49, 141, 322.
- apparatus for filtration of, (P.), B., 911.
- deposition of dust from, B., 181.
- separation of dust from, (P.), B., 2, 3.
- spark potential of, for high-frequency discharges, A., 1204.
- dielectric constant of, at high pressures, A., 894.
- ionisation of, A., 14.
- at high pressures, A., 890.
- by oxidation of phosphorus, A., 285.
- ions, wandering and space charge of, A., 782.
- ageing of, A., 1207.
- aged, mobility of, A., 15.
- ionised, radio-frequency properties of, A., 139.
- attachment of free electrons to neutral molecules in, A., 12.
- Eve's constant** for, A., 784.
- specific heat of, A., 1361.
- preheaters for, (P.), B., 423, 951.
- heat exchangers for heating of, (P.), B., 909, 910.
- reduction of temperature of, (P.), B., 1.
- liquefaction of, (P.), B., 3, 425.
- apparatus for, (P.), B., 372.
- liquid, constant-level device for, A., 592.
- manufacture of oxygen and nitrogen from, (P.), B., 758.
- density of mixtures of fumigants and, B., 276.
- effect of temperature on viscosity of, A., 417.
- colloidal, A., 1230.
- conditioning of, for heating or ventilating, (P.), B., 955.
- apparatus for, (P.), B., 704, 744.
- regeneration of, in closed rooms, (P.), B., 948.
- preparation of currents of, of different humidities, A., 1264.
- influence of temperature and humidity of, on human comfort and chemical processes, B., 824.
- quantitative humidification of, A., 816.
- ozonisation of, for ventilation, (P.), B., 925.
- combustion limits of mixtures of gases and, at low pressures, A., 1240.
- determination of inflammability of mixtures of gases and, B., 527.
- treatment of, for food preservative, therapeutic purposes, etc., (P.), B., 982.
- alveolar, inspired and expired, determination of ethyl iodide in, A., 857.
- compressed, oil extractor and filter for, (P.), B., 704.
- indicator for illuminating gases, etc., in, (P.), B., 226.
- detection of carbon monoxide and other gases in, (P.), B., 744.
- determination of carbon monoxide in mixtures with, A., 1258.
- determination of ethylene oxide in, B., 180.
- determination of hydrogen sulphide and methane in, A., 586.
- determination of mercury vapour in, A., 589.
- determination of ozone in, optically, A., 55.
- determination of sulphur dioxide in, B., 60.
- See also Atmosphere.
- Aircraft**, covering for, (P.), B., 585.
- corrosion and protection of aluminium alloys for, B., 205.
- lacquers for, B., 1062.
- Alabaster**, treatment of, for imitation marble, (P.), B., 159.
- Alanine**, specific dynamic action of, A., 762.
- aminolysis of, A., 1015, 1366.
- effect of, on tissue respiration, A., 1182.
- reactions of, A., 1042.
- determination of, A., 246.
- (+)-Alanine** polypeptides, physicochemical behaviour of, A., 1279.
- Alantolactones**, and their derivatives, A., 360, 734, 1065, 1301.
- n*- and *iso*-Alantolamides, A., 360.
- d*-Alanyl chloride, chloroacetyl derivative, A., 767.
- N*-Alanylanhydroglucosamine anhydride, A., 470.
- dl*-Alanylglycine, chloroacetyl derivative, A., 767.
- dl*-Alanyl-*l*-histidine, A., 1191.
- l*-Alanyl-*d*-leucyl-*d*-leucine, A., 1430.
- Albumin**, molecular weight of, A., 248.
- extraction of, from milk whey, (P.), B., 861.
- Albumin**, membrane potential and hydrogen-ion adsorption by, A., 1125.
- dielectric constants of solutions of, A., 1125.
- ultramicroscopy of thin iridescent films of, A., 679.
- denaturation of, A., 503.
- preparation of composition containing, (P.), B., 651.
- treatment of liquids containing, (P.), B., 223.
- manufacture of degradation products similar to, (P.), B., 668.
- autoclaved, nutritive value of, A., 868.
- blood, B., 564.
- egg-, molecular weight of, A., 374.
- change of rotatory power of, A., 1318.
- viscosity of, B., 609.
- coagulation of, A., 1368.
- pH*-stability region of, A., 374.
- equilibria of, with calcium and potassium salts, A., 428.
- use of whey-protein in place of, B., 41.
- action of proteinase on, A., 521.
- serum-, coagulation of, A., 1080.
- unity of fractions of, A., 858.
- temperature stability and denaturation of, A., 1080.
- denatured, flocculation of, by acids, A., 396.
- use of triketohydrindene as reagent for, A., 972.
- detection of, in urine, A., 1082.
- determination of, in cerebrospinal fluid, A., 861.
- See also Ovalbumin.
- Albuminous substances**, production of articles from, (P.), B., 855.
- Alchemy**, apparatus in, A., 929.
- Alcohol**. See Ethyl alcohol.
- Alcohols**, formation of, by catalytic hydrogenation of esters, A., 598.
- from olefines, A., 1267.
- preparation of, by reduction of fats under high pressure, A., 932.
- manufacture of, (P.), B., 334, 1132.
- from carbon oxides, (P.), B., 333.
- from olefines, (P.), B., 12.
- from oxidised hydrocarbons, (P.), B., 1040.
- purification of, (P.), B., 965.
- action of high-speed cathode rays on, A., 1379.
- optical measurements of equilibria of aliphatic aldehydes with, A., 573.
- catalytic alkylation of, (P.), B., 105.
- catalytic dehydration of, by sulphuric acid and alkali hydrogen sulphates, A., 918.
- catalysis by alumina and zinc oxide of disproportionation of, A., 710.
- esterification of, catalytically, A., 486.
- by means of thioacetic acid, A., 713.
- methylation of, by diazomethane, A., 206.
- oxidation of, by acetic bacteria, A., 1334.
- photochemical oxidation of, by potassium dichromate, A., 1019.
- formation of hydrocarbons from, by action of activated charcoal, A., 476.
- mixtures of petroleum hydrocarbons and, (P.), B., 383.
- prevention of corrosion of iron by, (P.), B., 255.
- reaction of, with trichloromethyl ketones, A., 486.
- of boiling-point less than 100°, purification of, (P.), B., 710.
- acetylenic, determination of, and composition of their silver compounds, A., 1393.
- aliphatic, synthesis of, from carbon monoxide and hydrogen, B., 874.
- heats of vaporisation of, A., 553.
- optical measurements of equilibria of alcohols with, A., 573.
- decomposition of, by Friedel-Crafts reaction, A., 604.
- reaction of, with benzenediazonium sulphate, A., 211.
- gaseous, catalytic dehydration of, A., 933.
- anhydrous, preparation of, A., 461.
- aromatic, action of, on aromatic compounds in presence of aluminium chloride, A., 83, 1047.
- higher, from hydrogenation of fish oils, B., 499.
- polyhydric, partial esterification of, A., 599.
- reaction between arsinoacetic acid and, A., 297.
- condensation of, with acetone in presence of phosphoric oxide, A., 599.
- conversion of, into chlorohydrins, with thionyl chloride, A., 933.
- manufacture of nitrated esters of, (P.), B., 965.
- treatment of, to inhibit corrosive action, (P.), B., 621.
- fermentation of, by the colon-aërogenes group of bacteria, B., 1117.

- Alcohols, *polyhydric*, partly acetylated, ring-chain tautomerism of, A., 1395.
 primary, production of, from esters, (P.), B., 834, 1003.
 synthetic, purification of, (P.), B., 666.
 unsaturated asymmetric, resolution of, A., 1393.
 biological action of, A., 1125.
 identification of, by means of hydantoin-3-acetic acid derivatives, A., 066.
 by formation of *p*-nitrophenylurethanes, A., 709.
 and their halides, through their magnesium alkyl halides, A., 597.
- Alcohols, *αα*-dichloro-, tertiary, preparation of, A., 461.
 action of organic bases on, A., 933.
- Alcoholic drinks. See Beverages, alcoholic.
- Alcoholic liquids, aldehyde-free, production of, (P.), B., 778.
- Alcoholysis, A., 1271.
- Aldechloroimines, aromatic, formation of nitriles from, A., 90.
- Aldehydes, A., 1056.
 action of high-speed cathode rays on, A., 1379.
 autoxidation of, A., 842.
 ozonation of, A., 604, 1016.
 catalytic reduction of mixtures of, with *p*-nitro- and *p*-nitroso-phenols, A., 837.
 conversion of, into higher molecular amines, A., 342.
 action of magnesium organic compounds on, A., 222.
 formation of nitriles from, A., 90.
 condensation of mixtures of ketones and, with ammonia, in presence of aluminium hydroxide, A., 630.
 condensation of, with *o*-aminothiophenols, A., 1075.
 with ethyl chloroacetate, A., 604, 1415.
 with secondary amines, A., 722.
 with hydrazones, A., 222, 957, 1416.
 influence of bases on, with malonic acid, A., 935.
 with phenols, A., 493, 1153.
 condensation products of amines and, (P.), B., 667.
 condensation products of guanidine and, (P.), B., 598.
 manufacture of solid resinous condensation products of, (P.), B., 261.
 reaction of, with *α*-chloro-esters, A., 844.
 with naphthaquinones, A., 1296.
 with penta-crythritol, in presence of zinc chloride, A., 1393.
 reactions of *o*-derivatives of, A., 1037.
 aliphatic, manufacture of non-resinous condensation products of formaldehyde and, (P.), B., 917.
 aromatic, condensation of, with malonanilic acid, and its derivatives, A., 1155.
 with active methylene compounds, A., 842.
 with nitromethane, in presence of alcoholic sodium hydroxide, A., 1417.
 with phenylacetonitrile, A., 620.
 substituted, pyridine synthesis from, A., 1072.
 cyanohydrins, action of sulphuric acid on, A., 1398.
 acylated, formation of thioamides from, A., 353.
 hydrazones, coupling reactions of, and diazo-compounds, A., 1156.
 detection of, in ethyl ether, B., 194.
 determination of, argentometrically, A., 1438.
- Aldehydes, amino-, manufacture of, (P.), B., 796.
 aromatic, manufacture of compounds of, (P.), B., 335.
 hydroxy-, A., 336.
 isomerisation of, A., 90.
 aromatic, manufacture of, (P.), B., 150*.
- Aldehyde-amines, stabilisation of, (P.), B., 621.
- Aldehyde groups, stability of, A., 89.
 determination of, in organic compounds, A., 1149.
- 2-Aldehydocoumarone, and its derivatives, A., 232.
- (3-Aldehyde-2'-4'-dimethylpyrrol)-3'-acetyl-2'-4'-dimethyl(pyrrol-enyl)methene hydrobromide, A., 368.
- Aldehydogalactose *pent*acetate, mutarotation of alcoholate and aldehydrol of, A., 1039.
- Aldehydoglucoseoxime, *hexa*- and *penta*-acetates of, A., 467.
- 2-Aldehyde-5-methoxy-6-ethoxybenzoic acid, and 3-nitro-, A., 1311.
- 2-Aldehyde-4-methyl-3-β-bromovinylpyrrole-5-carboxylic acid, and its derivatives, A., 240.
- o*-Aldehydostyrylaminesulphonic acid, and its disodium salt and dihydrate, A., 741.
- 4'-Aldehyde-3:3':5:5'-tetramethyl-4-ethylpyrromethene hydrobromide, A., 368.
- Alder, black, franguloside from, A., 131.
 water-soluble purgative from bark of, A., 885.
 rhamnoside from bark of, A., 274.
- Aldols, manufacture of, (P.), B., 1132.
- Aldoses, oxidation of, electrolytically, A., 1038.
 determination of, iodometrically, A., 199.
- Aldoximes, configurations of, A., 1429.
- Aleuritic acid, separation of, from shellolic acid, and its salts and derivatives, A., 960.
- Alfalfa. See Lucerne.
- Algae, plasmolysis of cells of, A., 399.
 organic matter given off from, A., 273.
 brown, gases in, A., 1198.
 malic acid in, A., 884.
 coralline, wall structure and mineralisation in, A., 525.
 marine, composition of, A., 884.
 iodine content in, A., 775.
 treatment of, (P.), B., 247.
- Alginic acid, manufacture of insoluble plastic compositions from, (P.), B., 676.
- Aliphatic compounds, treatment of sulphonated derivatives of, (P.), B., 1003.
 higher, A., 684.
 dimorphism of, A., 1003.
 liquid, magnetic birefringence in, A., 1355.
 oxygenated, synthesis of, from carbon monoxide and steam, (P.), B., 875.
- Alizarin, A., 1420.
 and its glucoside, derivatives of, A., 940.
 manufacture of vat dyes from, (P.), B., 1134.
- Alizarin, 3-iodo-, and its 1-methyl ether, A., 1420.
- Alizarin-blue, preparation of, A., 235.
- Alizarinsulphonic acid, sodium salt, use of, as reagent for alkaloids, A., 375.
- Alkali acetylides, production of, (P.), B., 57.
 alkyls, polarity of, A., 171.
 aluminates, production of, from bauxite, etc., (P.), B., 588.
 amides, action of, on electropositive metals, A., 580.
 bromides and fluorides, solubilities of, in anhydrous methyl-ethyl, and butyl alcohols, A., 1225.
 carbonates, production of, (P.), B., 718.
 and bicarbonates, manufacture of, (P.), B., 200.
 chlorides, decomposition of, at high temperatures, A., 807.
 and nitrates, action of boric acid on, A., 181, 1139.
 and sulphates, solubility of, in anhydrous alcohols, A., 419.
 chlorites, oxidation-reduction potentials of, A., 435.
 fluorides, pure, production of, (P.), B., 1139.
 halides, freezing points and osmotic coefficients of, A., 169.
 gaseous, ultra-violet absorption spectra of, A., 1109.
 production of large crystals of, A., 150.
 calculation of lattice energies and heats of sublimation of, A., 1222.
 additive colouring of crystals of, A., 998.
 reflexion of mercury by crystals of, A., 1207.
 velocity of sound in, and their compressibilities, A., 674.
 hydrides, A., 1358.
 hydroxides, production of, (P.), B., 157*.
 action of nitric oxide on, A., 1379.
 hypochlorites, determination of free alkali and carbonate in, B., 717.
 iodides, manufacture of, (P.), B., 1139.
 equilibria of, with sulphur dioxide, A., 799.
 gaseous, unexcited, energy of vibration of, A., 282.
 ions, ionisation of inert gases by, A., 1206.
 liquors, clarification of, (P.), B., 1138.
 treatment of, (P.), B., 111.
 lyes, concentrated, manufacture of, (P.), B., 538.
 metals, spectra and electron configurations of, A., 1.
 intensity relations in spectra of, A., 663.
 intensity of forbidden transitions in, A., 779.
 equilibrium of atoms and molecules of vapour of, A., 1107.
 photo-electric effect in thin films of, A., 1343, 1347.
 photo-electric emission from, A., 1206.
 blackening of photographic plates by, A., 1378.
 compressibility of, A., 791.
 flames of halogen hydrides with vapours of, A., 282.
 co-ordinated compounds of, A., 443.
 preparation of organosols of, A., 560.
 spectrochemical analysis of, A., 1.
 determination of, in natural waters and silicates, A., 1385.
 in sea water and in body fluids of marine animals, A., 643.

- Alkali metals, determination of, in tungstic acid, A., 926.
 nitrates, conductivity of, in liquid ammonia, A., 1236.
 organic compounds, A., 208, 364, 502.
 phosphates, production of, (P.), B., 393, 489, 840.
 from ferro-phosphorus compounds, (P.), B., 1139.
 reaction between chloroplatinic acid and, in ammoniacal solution, A., 1256.
 dihydrogen phosphates, action of heat on, A., 1139.
 phosphors. See under Phosphors.
metaplumbates, A., 808.
 salts, action of iron and nickel on, A., 443.
 sulphates, hydration and catalytic activity of, A., 1233.
 equilibria of, with water and sulphates of the vitriol type, A., 310.
persulphates, double salts from, A., 181.
 sulphides, treatment of waste liquors containing, (P.), B., 61.
 regeneration of solutions of, (P.), B., 924.
 hydrogen sulphides, manufacture of, (P.), B., 201.
polysulphides, A., 443, 807, 1139.
 atomic structure of, B., 19.
 recovery of sulphur from, (P.), B., 157*.
 sulphites, recovery of, from fusion liquors, (P.), B., 840.
 Alkalis, production of, by electrolysis, (P.), B., 848.
 influence of carbonic acid on conductometric titration of, A., 1256.
 Alkaline-earth *peraluminates*, A., 50.
 chlorides, manufacture of, from their sulphates, (P.), B., 1093.
 cyanamides, manufacture of, (P.), B., 293, 631, 1093.
 fluorides, band spectra of, A., 663.
 halides, band spectra of, A., 784.
 heats of dilution of, A., 310.
 hexahydrates, structure of, A., 789.
 iodides, manufacture of, (P.), B., 1139.
 metals, spectra and electron configurations of, A., 1.
 spectrochemical analysis of, A., 1.
 oxides, manufacture of, (P.), B., 1093.
 hydrates of, A., 412.
 reactions of, with solid halides, A., 803.
 phosphates, manufacture of, (P.), B., 840.
 salts, action of carbonic acid under pressure on, A., 181.
 sulphides, regeneration of solutions of, (P.), B., 924.
 Alkaloids, production of, in plants, A., 1340.
 fluorescence of, A., 750.
 sulphonation of, A., 105.
 precipitation of, in gels, A., 1314.
 inhibition of diazo-reaction of, in urine, A., 388.
 amine oxides of, A., 969.
 of *Berberis Thumbergii*. See *Berberis Thumbergii*.
 of *Helleborus*. See under *Helleborus*.
 from cocoa products, (P.), B., 566.
 gelsemium, A., 871.
 lupin. See Lupin alkaloids.
 quebracho. See Quebracho alkaloids.
 strychnos. See Strychnos alkaloids.
 yohimba. See Yohimba alkaloids.
 determination of equivalents of, by titration of their salts, A., 752.
 reagents for, A., 1438, 1439.
 detection of, microchemically, A., 504, 857.
 by precipitation by sodium alizarin-sulphonate, A., 375.
 in plants, A., 243, 639, 778.
 by precipitation, A., 243.
 with potassium iodate, A., 28.
 determination of, potentiometrically, A., 375.
 in their salts and in medicinal preparations, B., 904.
 in cinchona bark, B., 89.
 by potassium mercuri-iodide, A., 375.
 with quinhydrone electrode, A., 246.
 and their amine-oxides, by means of their silicotungstates and mercuric iodides, A., 1439.
 Alkalosis, A., 113.
n-Alkanes, synthesis and spectrochemistry of, A., 193.
 Alkanet root, evaluation of, colorimetrically, B., 45.
 Alkannin, constitution of, and its derivatives, A., 1063, 1297.
 Alkoxides, steric transformation of, A., 1286.
 alkali, addition of, to esters, A., 196.
 Alkoxyaldehydes, manufacture of, (P.), B., 710.
 α -Alkoxyalkyl esters, manufacture of, (P.), B., 1040.
 Alkoxybenzoic acids, amino-, *tert*-aminoalkyl esters, manufacture of, (P.), B., 179.
 Alkoxybenzophenonedicarboxylic acids, (P.), B., 797.
 Alkoxybenzophenonetetracarboxylic acids, (P.), B., 797.
 Alkoxy-compounds, amino-, manufacture of, (P.), B., 1027.
 Alkoxy-cyclohexenes, preparation of, from acetals, A., 212.
 Alkyl bromides, heat capacities of, A., 1362.
 reaction of, with piperidine, A., 494.
 and chlorides, manufacture of, from olefines, (P.), B., 1085.
 trichloromethyl carbonates, action of aluminium chlorides on, A., 462.
 halides, manufacture of, (P.), B., 237.
 absorption spectra of, A., 1350.
 removal of hydrogen halides from, A., 494, 597.
 gaseous, photo-oxidation of, A., 1138.
 iodides, preparation of, A., 333.
 effect of ultra-violet light on, A., 694.
 molecular combination of, A., 911.
 peroxides, A., 1267, 1268.
 hydrogen peroxides, hydroxy-, A., 1267.
 sulphides, action of inorganic refining reagents on, B., 468.
 sulphites, preparation of, A., 462.
 mixed, preparation of, A., 934.
 β -Alkylacetaldehydes, preparation of, A., 1273.
 Alkylamines, hydration of, in aqueous solution, A., 1126.
 fate of, in the organism, A., 1185.
 Alkylammonium iodide, crystal structure of, A., 551.
 Alkylaniline hydrobromides, formation of olefines from, A., 833.
 Alkylanilines, rearrangement of, A., 833.
 Alkylarsinic acids, and their alkali salts, crystalline form of, A., 27.
 5-Alkylbarbituric acids, reactivity of halogen derivatives of, A., 1074.
 α -Alkylcellobiosides, preparation of, A., 72.
 Alkylcyanoacetic acids, esters, addition of sodium enols of, to unsaturated esters, A., 603.
 10-Alkyl-5:10-dihydrophenarsazines, and their conversion into dichloroarsines, A., 1434.
 Alkylene cyanohydrins, manufacture of, (P.), B., 796.
 oxides, polymerisation of, (P.), B., 666.
 α -Alkylglucosides, Walden inversion during fission of, by mercuric chloride, A., 939.
 α -Alkylglycerols, Skraup reaction with, A., 98.
 Alkylhydrazines, reaction of, with phenylthiocarbimides, A., 951.
O-Alkylhydroxylamines, action of diazonium salts, nitrous and hypochlorous acids on, A., 1286.
 Alkylmalonic acids, esters, sodium derivatives, addition of, to unsaturated esters, A., 67, 603.
 Alkylmalonic acids, amino-, esters of, A., 338.
 Alkylmethyl chlorides, reaction of, with *p*-tolyl methyl ether, A., 622.
 Alkyl-naphthalenes, synthesis of, A., 80, 948.
 Alkylcyclopentanones, A., 843, 1417.
 2-Alkylpiperidines, preparation of, A., 629.
 Alkylpyridines, β -hydroxy-, manufacture of, (P.), B., 905.
Py-Alkylquinolines, preparation of, A., 98.
 1-Alkylisoquinolines, ω -halogeno-, and their derivatives, A., 365.
p-Alkylsulphonylphenylhydrazines, A., 1409.
 Alkylsulphuric acids, action of chloroformic esters on, A., 1393.
S-Alkylthiosemicarbazones, action of ferric chloride and hydrogen peroxide on, A., 238.
Allanblackia, oil from seeds of species of, B., 401, 816.
 Allantoic acid in edible plants, A., 132.
 Allantoin in edible plants, A., 132.
 determination of, microchemically, A., 976.
 spectrophotometrically, in blood and in seeds, A., 1080.
 in *Soya hispida* seeds, A., 402.
 Allantoinase in edible plants, A., 132.
 in fungi, A., 525.
 Allene, pyrolysis of, A., 61.
 Allenes, A., 1147.
 Allergy, effect of acid-base equilibrium on, A., 645.
Allium, production of pharmaceutical preparations from, (P.), B., 566.
Allium cepa, hypoglycæmic action of bulbs of, A., 872.
 Allolactose, and its phenyllosazone, A., 940.
 Allopalladium, A., 707.
 Allophanic acid, esters of, A., 714.
 Allotropy in liquids, A., 416.
 of pure metals, A., 673.
 Alloxan, toxic action of, A., 120.
 Alloys, structure of, A., 900.

- Alloys, constitution of, B., 980.
 X-ray study of constitution of, B., 252, 978.
 variation of composition of, with particle size, B., 300.
 potential variations during formation of, A., 173.
 electrodeposition of, (P.), B., 354.
 improvement of, A., 1119.
 casting of, (P.), B., 593.
 grain segregation in, B., 928.
 electrical conductivity of, at low temperatures, A., 556.
 superconductivity of, A., 556.
 magnetic disturbance of, A., 673.
 electrolysis of, A., 433.
 influence of electromagnetic waves on resistivity and hardness of, B., 846.
 electrical properties of mixed crystals of, A., 1212.
 mechanism of ageing of, B., 252.
 resistance of, A., 1361.
 to salt solutions, B., 495.
 action of salts and their solutions on, B., 637.
 action of phosphoric acid on, B., 844.
 protection of, against atmospheric corrosion, B., 682.
 for use at high temperatures, B., 24, 637.
 for high-pressure and temperature apparatus, testing of, B., 545.
 for vacuum-tight glass-metal joints, A., 1389.
 resistant to heat and sulphur, B., 681.
 sensitive to air, preparation of Debye-Scherrer diagrams of, A., 706.
 containing precipitated crystals, A., 1364.
 of the transitional elements, A., 676.
 anti-friction, determination of tin in, B., 1056.
 bearing-metal, purification of, (P.), B., 847.
 tin-base, macro-etching of, B., 398.
 binary, interatomic forces in, A., 1118.
 vapour pressures and activities of volatile components of, A., 309.
 liquid, interatomic forces in, A., 900.
 cold-worked, latent energy in, A., 1005.
 die-casting, zinc-base, (P.), B., 208, 302.
 ferromagnetic, treatment of, (P.), B., 593.
 atomic moments in, A., 28.
 hard, manufacture of, (P.), B., 890.
 heavy-metal, changes in mixed crystals of, B., 545.
 light, for cylinders, comparative tests with, B., 254.
 magnetic, A., 1118; B., 68.
 molten, casting of, (P.), B., 497.
 non-ferrous, micro-structure of, A., 1364.
 refining of, (P.), B., 812, 890.
 electric melting of, B., 446.
 spectrographic analysis of, B., 1014.
 sulphur-resisting, (P.), B., 353.
 ternary, electrolysis of, A., 569.
 analysis of, B., 68.
 use of logarithmic wedge sector in, B., 68.
 spectroscopic analysis of, A., 924; B., 1100.
 quantitative, A., 1385.
 determination of chromium and vanadium in, B., 299.
 Allyl alcohol, destruction of emulsin in, A., 765.
 action of phenols on, A., 1288.
 Allyl bromide, addition of hydrogen bromide to, A., 598.
 velocity of reaction of pyridine with, A., 316.
 chloride, preparation of, A., 194.
 compounds, mechanism of transformation of, A., 601.
 ethers, action of phenols on, A., 1288.
 2-Allylamino-6-keto-4:5-benzo-1:3-thiazine, and its hydrochloride, A., 634.
 Allylaniline, *p*-toluenesulphonyl derivative, A., 81.
 Allylanilines, pyrolysis of, A., 81.
 Allylbenzene, ω -chloro-, action of phosphorus pentachloride on derivatives of, A., 833.
 Allylcocaine, detection of, in narcotic poisons, A., 1171.
 Allyl- β -glucoside, synthesis of, A., 765.
 α -Allylmalonic acid, α -amino-, ethyl ester, and its derivatives, A., 338.
 γ -Allyloxyephedrine, A., 350.
N-Allyl-2-pyridonearsinic acids, A., 1315.
 Allylthiocarbimide, Raman spectrum of, A., 1353.
 action of sunlight on, A., 921.
 9-Allyl-8-thiouric acids, A., 743.
 9-Allyluric acid, A., 743.
 9-Allylisoaxanthine, 8-nitroso-, and its ammonium salt, A., 744.
 9-Allylisoaxanthine-8-thiolacetic acid, A., 743.
 Almonds, bleaching of, B., 860.
 Californian and imported, B., 42.
 European and Californian, composition of, B., 42.
 Aloins, constitution of, A., 490.
 Alums, paramagnetic, magnetic isotropy of, A., 154.
 Alumina. See Aluminium oxide.
 β -Alumina, crystal structure of, A., 789.
 Aluminium, manufacture of, (P.), B., 164, 812.
 electrolytically, B., 979; (P.), B., 121, 497.
 and its alloys, (P.), B., 1102.
 extraction of, from oxide minerals, (P.), B., 294.
 electrodeposition of, (P.), B., 765.
 surface treatment and electroplating of, B., 888.
 and its alloys, electroplating of, B., 256, 979; (P.), B., 1058.
 electroplating of, with chromium, B., 592, 1057.
 with copper, B., 845.
 with zinc, (P.), B., 164, 449.
 and its alloys, metallurgy of, A., 1119.
 and its alloys, refining of, B., 809; (P.), B., 890.
 electrolytic refining of, B., 592.
 apparatus for, (P.), B., 165*.
 and its alloys, molten, flux for purification of, (P.), B., 890.
 effect of heat-treatment on, B., 205.
 annealing of, B., 1055.
 casting of, (P.), B., 165.
 casting of ingots of, (P.), B., 208.
 effect of cold-stretching on plasticity of, at high temperature, B., 929.
 flow and fracture of, under loading, B., 445.
 and its alloys, welding of, to other metals, (P.), B., 354.
 solder for, (P.), B., 765.
 reflexion of ultra-violet light by, A., 1344.
 dispersion of, A., 999.
 ultra-violet spectrum of, A., 779.
 X-ray spectrum of, B., 3.
 vacuum furnace spectrum of, A., 6.
 disintegration of, A., 995.
 H-particles from, A., 16, 279.
 and its alloys with mercury, photo-electric effect of, A., 138.
 and its alloys, conductivity and Lorenz values of, B., 888.
 effect of iron on electrical conductivity and tensile strength of, B., 1143.
 specific resistance of, A., 1361.
 and its amalgams, electrochemistry of, A., 172.
 anode layers on, A., 173.
 paramagnetism of, A., 673.
 crystals, micro-structure of crystals of, A., 1358.
 recrystallisation of, A., 416.
 damping of vibration of, A., 552.
 electrical conductivity of, A., 894.
 dependence of plasticity of, on temperature, A., 1220.
 colloidal, sols, hydrous, coagulation of, A., 907.
 solution of, in alkaline solutions, A., 1243.
 passivity of, A., 175.
 and its alloys, corrosion of, B., 205, 298.
 protection of, against corrosion, (P.), B., 354, 812.
 electrolytic formation of protective films on, B., 352.
 coating of, (P.), B., 981.
 and its alloys, production of insulating coatings on, (P.), B., 547.
 and its alloys, production of oxide coatings on articles of, (P.), B., 932.
 production of coatings of, B., 592.
 coating of metallic objects with, (P.), B., 302.
 coating of wood or metal articles with, (P.), B., 890.
 pure, behaviour of, with acids and bases, A., 1243.
 resistance of, to fatty acids at 80–100°, B., 204.
 protection of, from attack by alkali, (P.), B., 164.
 determination of solubility of magnesium in, by means of X-rays, B., 978.
 effect of moist lithopone on, B., 204.
 effect of soda and soap solutions on, B., 204.
 active, A., 1140.
 rolled, orientation of, A., 27.
 sand-cast, unsoundness in, B., 1055.
 in plants, A., 662.
 toxicity of, compared with other metals, A., 1088.
 to plant growth, B., 604.

- Aluminium, use of, in chemical laboratories, B., 204.
in chemical industry, B., 117.
- Aluminium alloys, (P.), B., 28, 69*, 164, 208, 256, 354, 547, 764, 765, 932, 1102.
production of, (P.), B., 812, 890.
effect of temperature on toughness of, B., 25.
effect of rolling after quenching on ageing of, B., 978.
notched-bar impact strength of, B., 252.
with good ductility and bending properties, (P.), B., 121.
steel for die-casting moulds for, B., 1142.
crystallisation of, at pressures up to 20,000 atmospheres, B., 1054.
corrosion of, B., 298.
corrosion and protection of, for aircraft, B., 205.
increasing resistance to corrosion of, (P.), B., 208.
production of coloured protective layers on, (P.), B., 121.
production of wires of, (P.), B., 812.
binary, with transition elements, A., 418.
cast, B., 1142.
corrosion of, B., 205.
sand-cast, ageing of, B., 253.
heat-treated, dimensional stability of, B., 445.
light, expansion of, during heat treatment, B., 254.
effect of composition on flowability of, B., 205.
resistant to sea water, B., 763.
plastic, (P.), B., 1102.
- Aluminium alloys with antimony, A., 158.
with antimony and magnesium, B., 1143.
with beryllium, B., 845; (P.), B., 302.
with beryllium and silicon, A., 901.
with boron, electrolytic production of, (P.), B., 1015.
with chromium, A., 1223.
with copper, A., 1364; (P.), B., 354, 932.
age-hardening of, B., 351.
for casting, (P.), B., 765.
with copper and nickel, B., 1055.
with copper and silicon, B., 494.
with iron, production of castings of, (P.), B., 120.
manufacture of furnace parts from, (P.), B., 546.
with iron and carbon, B., 203.
with iron and silicon, A., 158; B., 929.
with magnesium, effect of atmosphere on electrical conductivity and tensile properties of, B., 205.
cast, B., 1143.
with magnesium and silicon, A., 158; B., 161.
age-hardening of, B., 809.
with manganese, A., 296.
with silicon, A., 556; (P.), B., 812.
macro-etching of, A., 1224.
with silver, A., 556, 1005.
with steel, nitrogenised, (P.), B., 120.
with titanium, constitution of, A., 676.
with zinc, (P.), B., 354.
joining of, to steel, (P.), B., 890.
- Aluminium compounds, manufacture of, (P.), B., 718.
excretion and absorption of, in rats, A., 515.
with fluorine, manufacture of, (P.), B., 1010.
- Aluminium salts, hydrolysis of, A., 910.
at high temperatures, B., 438.
influence of, on respiration of kidneys, A., 982.
- Aluminium bromide, conductivity of, A., 913.
chloride, manufacture of, (P.), B., 111, 489.
activity coefficient of hydrochloric acid in solutions of, A., 1234.
conductivity of fused mixtures of sodium chloride and, A., 555.
adsorption of, by clays, A., 298.
application of, in dye and petroleum industries, B., 392.
active, preparation of, A., 582.
anhydrous, preparation of, A., 445.
manufacture of, B., 246; (P.), B., 156, 393.
manufacture and uses of, B., 245.
removal of iron from (P.), B., 631.
basic, A., 696.
chloride and nitrate, equilibrium of, with potassium chloride and nitrate, B., 487.
trifluoride, crystal structure of, A., 1359.
precipitation of, (P.), B., 1093.
halides, heats of fusion and molecular heats of, A., 1361.
action of phosphine on, A., 583.
- Aluminium halides, complex compounds of, A., 1354.
ammonia compounds of, A., 1380.
anhydrous, production of, (P.), B., 111.
hydride, absorption spectrum of, A., 1103.
hydroxide, chemistry and morphology of, A., 444, 581.
ageing of, A., 679.
amphoteric, A., 1369, 1380.
colloidal, adsorption of chromates by, A., 420.
sols, action of, on blood, A., 972.
potentiometric titration of coagulation of, A., 1231.
medicinal, preparation and properties of, B., 536.
- Dialuminium hydroxide, A., 1020.
- Aluminium oxide (*alumina*), production of, (P.), B., 924.
from bauxite, etc., (P.), B., 588.
from Korean alunite, B., 881.
pure, (P.), B., 803.
production of phosphorus and, (P.), B., 925.
treatment of, (P.), B., 349.
effect of ignition temperature on properties of, A., 924.
energy distribution in band spectrum of, A., 779.
as basis of luminescent systems, A., 1253.
phosphors containing, A., 1253.
as ionising adsorbent, A., 1227.
melting of mixtures of chromium oxide, magnesium oxide, and A., 911.
fused, purification of, (P.), B., 539.
and its hydrate, adsorption of dyes by, A., 420.
adsorption of ethylene by, A., 419.
equilibrium of, with chromium sesquioxide, A., 1010.
catalytic action of, A., 1247.
manufacture of products of, with sulphides, (P.), B., 349.
determination of, in refractory clays, B., 395.
volumetrically, in minerals and refractory bricks, B., 440.
separation of, from beryllium oxide, A., 452.
separation and determination of boric acid and, B., 841.
oxide and hydroxide, peptisability and solubility of, A., 797.
dioxide, pure, production of, (P.), B., 202*.
catalytic, B., 487.
oxychloride sols, ageing of, A., 425.
phosphate, kinetic energy of positive thermions of, A., 782.
phosphates, A., 1022, 1233.
silicates, analysis of, B., 1091.
sulphate, manufacture of, (P.), B., 349.
from aluminous materials, (P.), B., 157.
equilibrium of, with lithium sulphate, A., 1235.
determination of, A., 1261.
- Aluminium organic compounds with organic acids, manufacture of, (P.), B., 718.
- Aluminium benzoyleamphor, mutarotation of, A., 1134.
- Aluminiumtrioxalic acid, A., 1380.
- Aluminium detection, determination, and separation:—
detection of, in printing inks, B., 260.
determination of, with dropping mercury cathode, A., 1261.
gravimetrically, A., 56.
micro-colorimetrically, A., 188.
spectrographically, in biological ash, A., 662.
in ferrochromium and in chromium, B., 298.
in silicate rocks, A., 927.
and its alloys, determination and removal of gases and oxides from, B., 1143.
and its alloys, determination of aluminium oxide in, A., 813.
determination of beryllium in, B., 253.
determination of iron in, B., 68.
determination of oxide in, A., 1025.
determination of oxygen in, B., 544.
separation of, from iron and titanium, A., 589.
- Aluminium bronze, (P.), B., 164.
eutectoid transformation of, A., 676.
crystal structure of β phase in, A., 33.
effect of constituents on hardness and structure of, B., 161.
containing vanadium, nickel, or iron, B., 765.
causes of fire and explosion in factories for, B., 1100.
- Aluminium cells. See under Cells, electrochemical.
- Aluminium ingots, manufacture of, (P.), B., 639.
- Aluminium ions, diffusion of nickel chloride into, A., 10.
- Aluminium moulds, sand for, B., 1143.
- Aluminium wire, effect of torsion on length of, B., 763.
- Alundum discs, permeability of, for water and oils, A., 593.
- Alunite, production of alkali aluminates and alumina from, (P.), B., 588.

- Alunite, Korean, decomposition of, B., 881.
 Amalgamators, centrifugal, (P.), B., 163.
 Amanita poisoning. See under Poisoning.
 Amadol, recovery of ammonium nitrate from, B., 655.
 Amber, optical rotation and purity of, B., 126.
 micro-organisms in, A., 655.
 "run," B., 169.
 Amber oil, B., 179.
 Amblystoma, effect of X-rays on regeneration of, A., 1088.
 Ambrosia, toxicity of pollen of, A., 870.
 Amethyst, imitation of coloration of, A., 459.
 solid inclusions in, A., 191.
 Amides, formation of, from nitriles, A., 471.
 production of, (P.), B., 1040.
 and their salts, constitution of, A., 608, 831.
 velocity and heat of saponification of, A., 916.
 aliphatic, preparation of, A., 831.
 unsaturated, isomerism of, A., 472.
 aromatic, preparation of, A., 481.
 di-acid, biuret reaction with, A., 77.
 optically active, Hofmann rearrangement of, A., 1053.
 substituted, preparation of, A., 209.
 sulphonated, manufacture of, and application as wetting agents, (P.), B., 433.
 Amides, α -hydroxy-, crystal structure of, A., 551.
 Amidines, mechanism of formation of, A., 843.
 producing hypoglycæmia, A., 1043.
 therapeutically active, manufacture of, (P.), B., 654.
 Amidine rearrangement, A., 87.
 Amines, formation of, from amino-acids, A., 470.
 dielectric constants of, A., 285.
 dielectric constant and electric moment of, A., 546.
 photochemical decomposition and interaction of, with ethylene, A., 1251.
 catalytic alkylation of, (P.), B., 105.
 diazotisation of, A., 1284.
 condensation of, with pernitrosocamphor, A., 95.
 action of, on 2-substituted semicarbazones, A., 613.
 with sulphur dioxide, A., 1011.
 condensation products of aldehydes and, (P.), B., 667.
 formation of compounds of ethyl salicylate with, A., 568.
 sulphur derivatives of, A., 1041.
 complex compounds of zinc halides with, A., 412.
 properties of, resembling coniine, A., 1329.
 metabolism of. See under Metabolism.
 and polyamines, differentiation of, A., 375.
 identification of, by means of hydantoin-3-acetic acid derivatives, A., 966.
 separation of mixtures of, (P.), B., 710.
 aliphatic, separation of, (P.), B., 964.
 aromatic, influence of strength on reactions of, A., 210.
 condensation of, with ethyl propylacetoacetate, A., 1407.
 colour reaction of, A., 209, 638.
 primary, reaction of, with ethyl acetoacetate, A., 831.
 substituted, action of, on camphoric anhydride, A., 626.
 higher molecular, formation of, from aldehydes, A., 342.
 pharmacologically active, synthesis of, A., 616.
 primary, reactions of, with sulphur chloride and lead oxide, A., 942.
 secondary, condensations of, with aldehydes and naphthols, A., 722.
 secondary and tertiary, mechanism of synthesis of, by reduction, A., 342.
 sympathomimetic, action of, A., 871.
 tertiary, action of organic acids on, A., 1076.
 Amines, bromo-, reaction of, with magnesium organic halides, A., 1402.
 Amino-acids, synthesis of, A., 943.
 Erlenmeyer synthesis of, A., 1290.
 physical chemistry of, A., 1002.
 crystallography of, A., 551.
 free energy and entropy of, A., 565.
 dehydration of, with formation of pyrrole derivatives, A., 1310.
 elimination of ammonia from, by ultra-violet light, A., 1251.
 action of formaldehyde on, A., 470.
 action of pepsin on, A., 1090.
 condensation of, with pyridine- and quinoline-carboxylic acids, A., 363.
 formation of nitrate from, A., 943.
 synthesis of peptide-like substances from, A., 470.
 Amino-acids, absorption spectra of anhydrides of, A., 367.
 esters, reactions of, with α -oxides, A., 830, 1154.
 distribution of, in blood, A., 110.
 effect of, on tissue respiration, A., 1182.
 hamatogenic therapy with, in pernicious anæmia, A., 252.
 benzoylated, hydrolysis of, A., 86.
 natural, and their derivatives, crystal structure of, A., 1002.
 tertiary, action of acetic anhydride on, A., 1436.
 triketohydrindene as reagent for, A., 972.
 colour reaction of, with sodium hypochlorite and phenols, A., 1436.
 detection and determination of, in urine, A., 113.
 determination of, formed by hydrolysis of proteins, A., 245.
 Amino-acids, halogeno-, removal of halogen from acyl derivatives of, A., 718.
 α -Amino-acids, preparation of, by hydrolysis of aminoalkylmalonic esters, A., 338.
 preparation of amides from, A., 1150.
 optically active, method of assigning, to *d*- or *l*-series, A., 943.
 β -Amino-acids, esters, *N*-alkylation of, A., 76.
 ω -Amino-acids, preparation of, A., 76.
 Amino-alcohols, A., 834.
 higher, A., 942.
 Amino-compounds, Raman effect of, A., 893.
 aromatic, production of, from monoazo-compounds, (P.), B., 13.
 catalytic hydrogenation of, (P.), B., 150*.
 used for stabilisation of explosives, determination of, B., 655.
 Amino-groups, α -migration of, A., 81.
 Amino-hydroxy-compounds, biuret reaction with, A., 1428.
 Amino-oximes, aromatic, action of phenylcarbimide on, A., 1416.
 Aminosulphonic acid, reaction between nitrites and, A., 182.
 acetyl and benzoyl derivatives, salts of, A., 1053.
 Ammines, A., 1139, 1300.
 Kossel-Magnus theory and structure of, A., 287.
 complex, A., 808.
 of complex thiocyanates, A., 1380.
 double, formation of, in aqueous solution, A., 182.
 Ammonia, formation of, in the electric discharge, A., 440, 1249.
 velocity of formation and decomposition of, A., 580.
 synthesis of, B., 880, 970; (P.), B., 19, 199.
 in the two voltage arc, A., 1135.
 by Mont Cenis process, B., 487.
 production of gaseous mixtures for, (P.), B., 488.
 purification of gases for, (P.), B., 757, 924.
 optimum hydrogen: nitrogen ratio for, A., 39.
 high pressure compressors for, B., 923.
 catalytically, (P.), B., 200, 426.
 formation of nitride film on tungsten in, A., 1247.
 catalysts for, (P.), B., 349.
 photo-electric properties of, A., 317.
 binary mixed molybdenum catalysts for, A., 1247.
 radiochemical equilibrium in, A., 909.
 manufacture of, (P.), B., 348, 630.
 apparatus for, (P.), B., 757.
 by the contact process, (P.), B., 1048.
 from gas-liquor, B., 52.
 treatment of iron catalyst for, B., 199.
 Feld process for extraction of, from coal gas, B., 99.
 apparatus for production of mixtures of air and, (P.), B., 157*.
 recovery of, in gas-works' practice, B., 706.
 infra-red absorption spectrum of, A., 1111.
 rotation vibration spectrum of, A., 1211.
 spectrum of mixtures of mercury vapour and, A., 1210.
 photochemical interaction of ethylene and, A., 442.
 dielectric constant of, A., 147.
 entropy and free energy of, A., 1127.
 heat transfer in condensers for, B., 139.
 thermochemistry in the system sulphuric acid and, A., 913.
 liquid, as a lyophilic dispersion medium, A., 164, 562.
 determination of molecular weights in, A., 292.
 conductivity of alkali nitrates in, A., 1236.
 effect of sodium nitrate on, A., 1021.
 solubility of salts in, A., 1365.
 value of C_p for, A., 792.
 density, surface tension, and adsorption in mixtures of water and, A., 298.
 pressure-volume-temperature values for, A., 554.
 vapour pressure and conductivity of aqueous solutions of, A., 1234.
 viscosity of, and of its mixtures, A., 1118.
 adsorbent material for, (P.), B., 911.

- Ammonia**, adsorption of, on chabazite, A., 902.
 on meerschaum, A., 902.
 by mineral silicates, A., 1120.
 thermal dissociation of, on tungsten, A., 1132.
 production of hydrogen by dissociation of, B., 246.
 solubility of, in various solvents, A., 901.
 distribution of, between chloroform and water, A., 902.
 equilibrium between ammonium carbonate, calcium phosphate and, B., 156.
 decomposition of, by cathode rays, A., 320.
 active products from decomposition of, in discharge tubes, A., 282.
 kinetics of decomposition of, on copper, A., 803.
 catalytic decomposition of, A., 176.
 in presence of iron, A., 1018, 1247.
 formation of hydrazine in electrical and photochemical decomposition of, A., 1250.
 thermal decomposition of, on platinum, A., 918.
 oxidation of, (P.), B., 630, 718.
 wire-gauze catalysts for, (P.), B., 19.
 supporting of catalyst for, (P.), B., 630.
 capacity of platinum catalyst for, B., 674.
 poisoning of platinum catalysts for, B., 1091.
 biological oxidation of, A., 525.
 catalytic oxidation of, (P.), B., 393, 630, 971.
 prevention of explosions in, (P.), B., 1138.
 photochemical oxidation of, to nitrate, B., 690.
 combination of, with gelatin, A., 1125.
 explosion of mixtures of air and oxygen with, A., 688.
 reaction of carbon monoxide with, A., 176.
 action of, on fluorine, A., 809.
 reaction of, with hydrocarbons, A., 176.
 production of nitric acid from, B., 18; (P.), B., 111.
 compounds of, with sulphur dioxide, A., 1021.
 derivatives, Debye dipole theory of binary mixtures of, A., 157.
 influence of p_H on formation and decomposition of chloro-derivatives of, A., 583.
 removal of, from air, (P.), B., 138.
 from gases, (P.), B., 103, 576.
 from compounds, by ultra-violet light, A., 1251.
 transport and excretion of, A., 110.
 and its precursors in blood and muscle, A., 641, 1319, 1449.
 formation of, in the frog's heart, A., 255, 869.
 in kidneys, A., 256.
 in liver, effect of insulin on, A., 1194.
 in muscle, A., 513, 647, 1185.
 formation of, in frog's muscle, A., 255, 763.
 by-product, from gas-works, B., 99.
 quantitative distillation of, from buffered solutions, A., 1023.
 detection of, in milk, B., 1119.
 apparatus for, (P.), B., 803.
 detection and determination of, in urine, A., 113.
 determination of, bromometrically, A., 1024.
 colorimetrically, A., 925.
 microchemically, A., 538.
 volumetrically, in water, A., 586.
 in urine, A., 1444.
- Ammoniacal liquors**, disposal of, B., 791.
 recovery of ammonia from, (P.), B., 998.
 treatment of, and recovery of fertilisers therefrom, (P.), B., 379.
 recovery of tar acids from, B., 706.
 gas works, removal of hydrogen sulphide from, B., 748.
 residual, treatment of, (P.), B., 587.
 determination of phenols in, from gas works, etc., B., 706.
- Ammoniates**, A., 698.
- Ammonium salts**, conductivity of, in methyl alcohol, A., 1129.
tetra-substituted, velocity of formation of, in mixtures of acetone and chloroform, A., 315.
 determination of nitrogen in, B., 756.
- Ammonium bromide**, dispersion of, A., 1214.
 and chloride, pressure-volume-temperature relations of, A., 1117.
 carbonate, equilibrium between ammonia, calcium phosphate and, B., 156.
 hydrogen carbonate, manufacture of, (P.), B., 718.
 equilibrium of decomposition of, A., 432.
 dimagnesium hydrogen carbonate, A., 181.
 chloride (*sal ammoniac*), manufacture of, (P.), B., 757.
 equilibrium of, with sodium dichromate and water, A., 912.
 metabolic reactions to acidosis by, A., 118.
- Ammonium chlorostannate**, determination of ammonia and chlorine in, A., 1384.
 chromate, crystal structure of, A., 1218.
 reaction between lead chloride and, A., 182.
hexafluoroaluminato, lattice constant of, A., 671.
 halides, density, and refractivity of crystals of, A., 24.
 mercuri-iodides, constitution of, A., 26.
 molybdates, A., 923.
 nitrate, manufacture of, explosion in Ammonite Co.'s plant for, B., 655.
 recovery of, from amatol, B., 655.
 production of mixtures of calcium carbonate and, (P.), B., 201.
 corrosion and loss during evaporation of solutions of, B., 347.
 solid, group rotation in, A., 1215.
 and sulphate, production of mixtures of, B., 156.
 nitrates, quaternary, decomposition of, in presence of amines, A., 75.
 nitrite, kinetics of evolution of nitrogen from, A., 1244.
 phosphate, manufacture of, (P.), B., 538, 606, 840, 882.
 from potassium phosphates, (P.), B., 971.
 hydrogen phosphate, production of, (P.), B., 718.
mono- and *dihydrogen* phosphates, production of, (P.), B., 882.
 sulphate, preparation of, B., 586.
 manufacture of, (P.), B., 20, 293, 349, 392, 393, 631, 971, 1048, 1049.
 by "electro-nitrogen" process, B., 970.
 from ammonia, sulphur dioxide and water vapour, B., 245.
 from ammoniacal liquors and gypsum, (P.), B., 111.
 from calcium sulphate, B., 18, 110.
 dry, B., 924.
 recovery of, centrifugally, (P.), B., 868.
 refractive index, density and concentration of solutions of, A., 1176.
 crystallography of double sulphates of, A., 415.
 neutralisation of, from gas works, with ammonia, B., 756.
 influence of radium on nitrification of, A., 765.
 and phosphate, manufacture of, (P.), B., 201.
 sulphate nitrate, production of, (P.), B., 1138, 1139.
 manganese sulphate *hexahydrate*, magnetism of, A., 1114.
persulphate, preparation of, with streaming electrolytes, A., 1248.
 sulphide, reaction of, with formaldehyde, A., 573.
 oxidation of, B., 245.
 cuprous thiosulphate, A., 49.
 silver thiosulphate, A., 1252.
- Ammonium organic compounds**, quaternary, from tertiary amines and benzenesulphonyl chloride, A., 1045.
- Ammonium carnallite**, production of, (P.), B., 803.
- Amni visnaga**, constituents of fruit of, A., 885.
- Amniotic fluid**, citric acid in, A., 643.
- Amaba proteus**, variation in response to light of, A., 394.
- Amphiboles**, magnesian, from the dry melt, A., 1146.
- Ampholytes**, effect of addition of salts on p_H of solutions of, A., 799.
- Amygdalin**, racemisation of, catalytically, A., 826.
- Amyl alcohol**, oxidation of, in air, A., 1372.
- isoAmyl alcohol**, adsorption of, in solution, A., 558.
 active, dispersion of, A., 895.
- Amyl nitrite**, poisonous nature of, B., 516.
 nitrites, isomeric, preparation of, A., 196.
- isoAmyl nitrate**, Raman spectrum of, A., 1353.
 sulphite, A., 463.
 ether, preparation of, A., 820.
- tert.-Amyl thionitrite**, A., 820.
- β -isoAmyl aldehyde**, and its derivatives, A., 1273.
- isoAmylamine**, condensation of, with propylene oxide, A., 720.
 hydrogen sulphide, A., 1042.
- 1-Amylaminobenzthiazoles**, and their hydrohexabromides, A., 969.
- o*-Amylaminophenylarsinic acids**, A., 1173.
- α -isoAmylaminoisopropyl alcohol**, and its derivatives, A., 720.
- n*-Amylammonium chloride**, crystal structure of, A., 551.
- Amylan**, and its acetyl derivative, A., 74.
- isoAmylaniline hydrobromide**, A., 834.
p-toluenesulphonyl derivative, A., 463.
- p*-isoAmylanisole**, A., 1434.
- n*-Amylarsine**, dichloro-, A., 1435.
- Amylase**, effect of ultra-violet light on, A., 1331.
 action of electromagnetic waves on, A., 873.
 synthetic action of, on dextrins, A., 1089.

- Amylase, influence of cinchona alkaloids on, A., 520.
 reaction of, with starch and gelatin, A., 983.
 effect of thiocyanates on activity of, A., 1089.
 protective substances for, A., 391, 519, 1189.
 cereal, dialysis of, A., 1189.
 crystalline, A., 1089.
 of horse serum during bleedings, A., 754.
 malt, determination of liquefying power of, B., 85.
 and potato, A., 1331.
 potato, action of potassium cyanide on, A., 1089.
 from rice, A., 1189.
 soya-bean, saccharification of starch by, A., 982.
 of urine, determination and stability of, A., 1189.
 detection of, in milk, B., 42.
 determination of, A., 1190, 1131.
 5-isoAmylbarbituric acid, 5-bromo-, A., 1074.
 2-*n*-Amylbenzimidazole, A., 601.
 α -Amylclobioside *heptanoate*, A., 73.
 α -Amylcinnamaldehyde, A., 958.
 autooxidation of, A., 1154.
cis- and *trans*- α -*n*-Amylcinnamic acids, and their derivatives, A., 1154.
 α -*n*-Amylcinnamionitrile, A., 1154.
 β -*n*-Amylcinnamyl alcohol, and its phenylurethane, A., 724.
 10-*n*-Amyl-5:10-dihydrophenarsazine, A., 1435.
 10-isoAmyl-5:10-dihydrophenarsazine, and its derivatives, A., 373.
 10-isoAmyl-9:10-dihydrophenarsazine *dihydroxide* and oxide, A., 637.
 Amylenes, oxidation of, in air, A., 1372.
 condensation of, catalytically, A., 460.
 2-*n*-Amylindone, and its oxime, A., 1154.
 β -Amyl- $\Delta\beta$ -*n*-nonenylidenecyclohexylamine, A., 343.
 Amylopectin, X-ray spectrum of, B., 1069.
*allo*Amylosans, and their acetates, A., 1277.
 Amylose, X-ray spectrum of, B., 1069.
 Amyloses, A., 1276, 1277.
 Amylosynthase, A., 653, 1331.
 α -(Amyloxyacetyl)-4-ethoxypropane, A., 820.
 Amyloxycyclobutanepiropbarbituric acid, A., 621.
 3-Amyloxycyclobutane-1-carboxylic acid, and its silver salt and derivatives, A., 621.
 3-Amyloxycyclobutane-1:1-dicarboxylic acid, and its copper salt and derivatives, A., 621.
 3-Amyloxymethoxycyclobutane-1:1-dicarboxylic acid, and its copper salt and ethyl ester, A., 621.
 Amyloxymethyl α -*di*chloro- and α -chloro- γ -bromo-isopropyl ethers, A., 621.
o-isoAmyloxyphenylarsinic acid, A., 1173.
 β -isoAmyloxypropionic acid, Kolbe's synthesis with, and its derivatives, A., 1034.
 2-isoAmyloxyquinoline-4-carboxylic acid, and its diethylamino-ethyl ester, A., 1167.
p-isoAmylphenol, A., 1434.
n-Amylphenols, and their derivatives, A., 224.
o-*n*-Amylphenoxyacetic acid, A., 224.
 α -Amylpimelic acid, A., 67.
 α -Amylpimelic acid, and its amide, A., 67.
 2-Amylpiperidine, preparation of, and its chloroplatinate, A., 629.
 1-isoAmylpyridinium iodide, molecular salt of, with benzidine, A., 740.
N-isoAmyl-2-pyridone-5-arsinic acid, A., 1315.
 isoAmylsulphinic acid, derivatives of, A., 64.
 isoAmylsulphonic acid, and its derivatives, A., 64.
p-isoAmylsulphonylphenylhydrazine, A., 1409.
 isoAmylthiosulphonic acid, isoamyl ester, A., 64.
 Amyrene, A., 625.
 γ -Amyrilene, A., 625.
 β -Amyrin, and its benzoate, from Manila elemi resin, ozonolysis of, A., 1299.
 Amyrins, and their constitution and derivatives, A., 624.
 α -Amyrone, hydrazone of, A., 624.
 Anabasine, and its salts, and nitroso-, A., 498.
Anabasis aphylla, alkaloids of, A., 498.
 Anacardic acid, and its derivatives, A., 840.
Anacardium occidentale, seed of fruit of, B., 849.
 Anæmia, A., 1323.
 reaction of tissues and their buffering powers in, A., 113.
 amino-acid in blood in, A., 1082.
 catalase and glutathione in red blood-corpuscles in, A., 1082.
 oxidation of serum in, by potassium ferrieyanide, A., 758.
 Anæmia, treatment of, with iron and liver extract, A., 864.
 replacement of iron in, A., 758.
 due to milk diet, treatment of, A., 1323.
 effect of amino-acids on, A., 510.
 experimental, action of methyltryptophan in, A., 514.
 action of tryptophan in, A., 514.
 goats' milk, A., 645.
 hæmorrhagic, A., 1323.
 in rabbits, lipæmia in, A., 113.
 nutritional, production of, in rats, A., 1323.
 supplemental diets in, A., 1180.
 pure glutamic acid as supplement to iron in, A., 1323.
 ineffectiveness of manganese in, A., 510.
 pernicious, microscopy of blood in, A., 382.
 glucose tolerance in, A., 1444.
 hæmoglobin in, A., 376.
 lack of histidine and tryptophan in, A., 252.
 elimination of urobilinogen in, A., 864.
 Anæstotuberculin, characteristics of, A., 1193.
 Anæsthesia, chemistry of, A., 518.
 movement of brain-water in, A., 872.
 effect of, on nitrogen metabolism, A., 1453.
 chloroform, content of chloroform in tissues during, A., 121.
 ether, reduction of oxidation during, A., 121.
 effect of, on blood-calcium, A., 121.
 insulin and blood-sugar level in, A., 1087.
 Anæsthesin, reactions of, A., 220; B., 89.
 Anæsthetics, local, (P.), B., 179, 483, 725.
 pharmacology of, A., 260, 1453.
 influence of *pH* on activity of, A., 649.
 toxicology of, A., 121.
 in diphenyl ether series, A., 731.
 containing the morpholine ring, A., 1075.
 in the pyrrole series, A., 629.
 Analcime, structure of, A., 550, 789.
 X-ray distinction between leucite and, A., 595.
 Analcite, A., 1030.
 Analgesics, dioxypyridone as, B., 89.
 biological assay of, A., 388.
 Analysis, A., 538.
 chemical reactions in, A., 1022.
 apparatus for control in, A., 1388.
 with centrifuges, A., 1256.
 of anions, A., 1256.
 with permanganates, A., 927.
 bromatological, application of Kjeldahl-Ronchèse method to, A., 1174.
 bromiodometric, A., 325, 699, 811.
 capillary, A., 698.
 cœruleo-molybdimetric, colorimetric comparison reagent for, A., 927.
 colorimetric, A., 54.
 standard solutions for, A., 699.
 use of photo-electric cells in, A., 1263.
 by Bloch leukometer, A., 58.
 combustion, absorption tube for, A., 458.
 conductometric, A., 1256.
 titration, cell for, A., 1026.
 electrochemical, in ammoniacal fluorides, A., 701.
 electrolytic, polarographic methods in, A., 1383.
 electrometric, apparatus for, A., 189.
 with precipitation reactions, solid electrodes in, A., 1260.
 luminescence, A., 453; B., 403.
 microchemical, with ordinary balance, A., 700.
 promoters of crystallisation in, A., 1383.
 alkaline ashing method of, A., 1202.
 catalysis in, A., 1133.
 acidimetric, A., 584, 1256.
 colorimetric, A., 188.
 elementary, electric furnace for, A., 189.
 organic, electric heating of furnaces in, A., 1263.
 photo-electric, A., 325.
 by sublimation, A., 246.
 microgravimetric, A., 1389.
 nephelometric, A., 1141.
 standardisation of turbidity values in, A., 1262.
 titration, A., 456.
 organic, elementary, sources of error in, A., 1078.
 ignition of combustion tube in, A., 1078.
 qualitative, A., 504.

- Analysis, organic, ultra-microchemical, A., 971.
 physico-chemical, organic, A., 192.
 potentiometric, apparatus for, A., 703.
 using quinhydrone-calomel electrodes, A., 816.
 titration, A., 450.
 in non-aqueous solutions, B., 849.
 precipitation, A., 453, 584, 926.
 qualitative, A., 587.
 by drop reactions, A., 698.
 organic reagents for, A., 188.
 treatment of thio-salts in, A., 328.
 colorimetric, increasing sensitivity of, A., 1022.
 quantitative, by means of X-rays, A., 702.
 mercury ammonium derivatives in, A., 1260.
 rapid, by centrifugal phase separation, A., 1145.
 ultramicroscopic, manipulation in, A., 455.
 volumetric, accurate, A., 1022, 1259.
 of dark-coloured liquids, A., 810.
 use of bromates in, A., 925.
 protection of solutions for, with liquid paraffin, A., 185.
 nephelometric, A., 1256.
- Anaphylaxis, influence of, on blood-sugar variations, A., 1454.
 by serum, A., 1321.
- Anatomical specimens, preservation of, (P.), B., 864.
- Andalusite, use of, as a refractory, B., 926.
- Androkinin in blood, A., 398.
 detection of, A., 269.
- Andromedotoxin, A., 870.
- Andropogon sorghum vulgaris*, Kōryō oil from, B., 124.
- Andropogon virginicus*, composition of consecutive cuttings of, A., 274.
- Anethole, separation of, from pine oil, (P.), B., 554.
- isoAnethole, structure of, A., 85.
- Anetholesulphonic acid, sodium salt, polymeride of, as anti-coagulant, A., 379.
- Angles, contact, apparatus for measuring, A., 816.
- Anglesite, formation of, B., 677.
- Angustione, constitution of, and its copper derivative, and amino-, A., 487.
- Anhydrides, acid, manufacture of, (P.), B., 1085.
 aliphatic, manufacture of, (P.), B., 237, 1040.
 chloro-, action of hydrogen sulphide on, A., 88.
- Anhydrite, velocity of solution of, A., 796.
- Anhydro-6-amino-4-methoxy-3-ethoxyphthalic acid, A., 1311.
- Anhydroangustione oxime, A., 488.
- Anhydrobisdiketohydrindene. See Di-indone.
- Anhydrocchoritin, A., 1420.
- Anhydrodigoxigenin, and its diacetyl derivative, A., 74.
- Anhydrofructose, non-identity of, with difructose anhydride, A., 72.
- Anhydrohydrastinineneitromeconines, A., 499.
- Anhydro- α -*di*hydroxyhexan- ϵ -one, and its derivatives, A., 68.
- Anhydro-*N*-hydroxyhydrasteine, A., 970.
- Anhydro-3-hydroxymercuri-5-acetoxymercuri- β -resorcylic acid, A., 106.
- Anhydro-5-hydroxymercuri- β -resorcylic acid, A., 106.
- Anhydro-3:5-*di*hydroxymercuri- β -resorcylic acid, A., 106.
- Anhydro-*N*-hydroxynorhydrastimethine, derivatives of, A., 969.
- 3:6-Anhydroidose, and its isopropylidene ether, A., 71.
- Anhydromercuri-*di*hydroxymercuri-*p*-benzylphenol, A., 1078.
- Anhydrodinitro-*p*-toluenesulphonamidophenylpyridinium salts and hydroxides, A., 1287.
- Anhydroisoperiplogonic acid, methyl ester, A., 827, 1297.
- Anhydropyroquinovic acid, and its derivatives, A., 1158.
- Anhydroquinovic acid, derivatives of, A., 1159.
- Anhydroisostrophanthonic acid, derivatives of, A., 1297.
- Anhydro-sugars, A., 70.
- Anhydroxatine, A., 1171.
- Anils, reaction of, with *p*-thiocresol, A., 91.
- Anilic acids, reaction of, with thionyl chloride, A., 339.
- Anilides, action of hypochlorous acid on, A., 949.
- Aniline, hydrogenation of, over nickel, A., 693.
 influence of cerium and lanthanum on, A., 341.
 action of, and its derivatives, on benzaldehyde and pyruvic acid, A., 98.
 on β -bromoethanesulphonyl chloride, A., 1033.
 with methyl chloride, A., 1407.
 with sulphur dioxide, A., 1011.
 and *p*-bromo- and *p*-chloro-, bromo- and chloro-stannates of, A., 790.
- Aniline hydrochloride, action of alcohols and esters on, A., 342.
 picrate, crystal structure of, and 2:4:6-trinitrodiphenylamine, A., 415.
 determination of, in its salts, by thermometric titration, B., 1003.
- Aniline, *p*-bromo-, diazonium fluoborate, A., 945.
 1:2:3:5-tetrabromo-, A., 1046.
p-chloro-, preparation of, A., 1284.
 2-chloro-5-iodo-, A., 79.
 4-fluoro-3-nitro-, lability of fluorine in, A., 1284.
p-iodo-, preparation of, A., 833.
o-nitro-, polymorphism of, A., 1407.
m-nitro-, fluosilicate, A., 612.
 2:6-dinitro-4-thiocyano-, A., 474.
- Anilines, chloro- and nitro-, ionisation constants of, A., 39.
 chloronitro-, preparation of, from *o*- and *p*-dichlorobenzenes, A., 950.
- Aniline black, control of quick-steaming apparatus for, B., 483.
 treatment of, after ageing, B., 483.
 production of colour reserves under, B., 800.
 dyeing of cellulose acetate materials with, (P.), B., 838.
 use of Bismarck brown in dyeing with, B., 483.
 in printing of naphtholated goods, B., 485.
- Aniline-blue series, dyes of, A., 350.
- Anilinedisulphonyl chloride and dianilide, A., 1283.
- Aniline-*o*-sulphonic acids, 3:4:6-trisubstituted, manufacture of, (P.), B., 434.
- Anilinoacetamide-4-arsinic acid, sodium salt, A., 970.
- Anilinoacetic acid, optically active, molecular symmetry of, A., 1355.
- 5-Anilinoacetyl-2:4-dimethyl-3-ethylpyrrole, A., 494.
- 5-Anilinoacetyl-2:4-dimethylpyrrole, and 3-bromo-, A., 494.
- 5-Anilinoacetyl-2:3:4-trimethylpyrrole, A., 494.
- 4-Anilino-3-*n*-amyl-2-*n*-hexylquinoline, and its salts, A., 495.
- 2-Anilinoanthracene, and its picrate, A., 357.
- 9-Anilinoanthrone-1-carboxylic acid, A., 624.
- 2-Anilino-3-benzamido-6:7-methylenedioxyquinoline, A., 743.
- 2-Anilino-3-benzamidoquinoline, A., 743.
- Anilino-*o*-benzylthiodiazoloneanil, A., 951.
- 4-Anilino-2-chloromethylquinoline, 3-chloro-, 3:7-dichloro-*m*-chloro-, and 3-chloro-6-iodo-*p*-iodo-, and their derivatives, A., 236.
- β -Anilinoacetyl-*m*-nitroanilide, β -*m*-nitro-, A., 1318.
- 2-Anilino-3-cyano-6:7-dimethoxyquinoline, A., 237.
- 2-Anilino-3-cyano-6:7-methylenedioxyquinoline, A., 237.
- 4-Anilino-2-cyanomethylquinoline, 3-chloro-, and its benzylidene derivative, A., 236.
- 2-Anilino-3-cyanoquinoline, A., 236.
- 4-Anilino-2-diethylaminomethylquinoline, 3-chloro-6-iodo-*p*-iodo-, and its picrate, A., 236.
- 4-Anilino-2-dimethylaminomethylquinoline, 3-chloro-, and its picrate, A., 236.
- 10-Anilino-1:4-dimethylanthrone, A., 341.
- 10-Anilino-2:3-dimethylanthrone, A., 612.
- 10-Anilindimethylanthrone, A., 1058.
- 10-Anilino-1:5-diphenoxanthrone, A., 225.
- β -Anilino- α -*p*-diphenylethyl benzyl ketone, A., 842.
- 4-Anilino-2-*p*-ethoxyanilinomethylquinoline, *m*-chloro-, A., 236.
- 4-Anilino-6-ethoxy-2-methylquinoline hydrochloride, A., 1429.
- 4-Anilino-3-ethyl-2-propylquinoline, and its hydrochloride, A., 495.
- 1- β -Anilinoethyltheobromine, A., 239.
- 3-Anilino-1-ethylthiodiazolone-5-anil, and its hydrochloride, A., 951.
- 4-Anilino-3-*n*-hexadecyl-2-*n*-heptadecylquinoline, and its hydrochloride, A., 495.
- 4-Anilino-6-hydroxy-*o*-phenylene- α -quinolylenemethane hydrochloride, A., 495.
- 2-Anilino-4:5-cyclohexano-oxazoline, A., 832.
- 4-Anilino-2-hydroxymethylquinoline, 3-chloro-, A., 236.
- 2-Anilino-5-hydroxy-1:4-naphthaquinone, *mono*- and *di*-bromo-, A., 217.
- 2-Anilino-5-hydroxy-1:3:4-thiadiazine, and its derivatives, A., 635.
- 2-Anilino-6-keto-4:5-benzo-1:3-thiazine, A., 634.
- 5-Anilino-2-keto-2:3-dihydro-1:3:4-thiadiazole, A., 475.
- 4-Anilino-6-methoxy-2-methylquinoline, and its hydrochloride, A., 372.
- 10-Anilino-3-methylanthrone, A., 1058.
- enol*-Anilino-3-methylanthrone, *p*-nitro-, A., 1300.

- Anilinomethyleneamphors, stereoisomeric, rotatory dispersion of, A., 1160.
- 4-Anilino-3-methyl-2-ethylquinoline, and its picrate, A., 236.
- 4-Anilino-2-methylquinoline, 3-chloro-, and its picrate, A., 236.
- 2-Anilino-1:4-naphthaquinone, *mono*- and *di*-bromo-, anils of, A., 216.
- Anilino-5:8-naphthaquinone, *tribromo*-2-amino-, A., 347.
- Anilino- α -naphthylaminesulphonic acids, bromo-, A., 347.
- α -Anilino-phenylacetone, reaction of, with cinnamaldehyde, A., 849.
- β -Anilino- α -phenyl- β -*p*-anisylethyl benzyl ketone, A., 842.
- 4-Anilino-2-benzylquinoline, and its salts, A., 236.
- 3-Anilino-*endo*-9:10-*o*-phenylene-9:10-dihydro-1:4-antraquinone, 2-chloro-, A., 1044.
- 4-Anilino-*o*-phenylenequinolylmethane, A., 495.
- γ -Anilino- γ -phenyl- α -keto-*n*-butyric acid, and its calcium salt, A., 99.
- β -Anilino- α -phenyl- β -3:4-methylenedioxyphenylethyl benzyl ketone, A., 842.
- α -Anilino-*propionic* acid, 2:5-*di*bromo-, A., 1046.
- 1- β -Anilino-*propyl*theobromine picrate, A., 239.
- 4-Anilino-*pyridine*, A., 851.
- 4-Anilinoquinazoline, and its salts, A., 1431.
- 5-Anilinoquinizarin, A., 846.
- Anilino-*tetrahydro*acridine, and its hydrochloride, A., 495.
- 4-Anilino-2:3-trimethylenequinoline, and its hydrochloride, A., 495.
- 5-Anilino-4:3':5'-trimethylpyrromethene-3:4'-dipropionic acid, derivatives of, A., 633.
- 5-Anilino-2-keto-2:3:4:5-tetrahydro-1:3:4-oxadiazole 2-phenylhydrazine, A., 475.
- 5-Anilinothiohydantoin, and *mono*- and *di*-hydroxy-, A., 495.
- Animals, influence of nutrition on condition of, A., 867.
- mineral nutrition of, A., 648.
- preservation of carcasses of, (P.), B., 134.
- marine, osmosis in, A., 640.
- determination of alkali metals in body fluids of, A., 643.
- Animal matter, cooking of, (P.), B., 259.
- edible, preservation of, (P.), B., 610.
- Animal tissues, elements in, A., 111.
- metals in, A., 111.
- iron in, A., 861.
- phosphatase of, A., 1456.
- secondary electronic emissions from, A., 140.
- warm-blooded, lactic acid fermentation in, A., 765.
- spectrographic analysis of, A., 756.
- Anisaldehyde, condensation of, with its phenylhydrazone, and with benzaldehydophenylhydrazone, A., 222.
- 2:4-dinitrophenylhydrazone, A., 937.
- Anisaldoxime, *m*-amino-, and its phenylthiocarbamido-derivative, A., 842.
- Anis- β -3:4-dimethoxyphenylethylamide, A., 1168.
- Aniseed oil, abnormal, diverging of constants of, from B.P. requirements, B., 781.
- Anisic acid, condensation of, with dichloroacetaldehyde, A., 1054.
- o*-Anisidine, condensation product of, with dextrose, A., 1149.
- p*-Anisidine, reaction of, with ethyl methylacetate, A., 346.
- Anisilic acid, condensation of, with thionaphthen and thiophen, A., 361.
- Anisole, *di*bromo-4-hydroxy- and -nitro-4-hydroxy-, and their derivatives, A., 837.
- 2:4:6-*tri*chloro-, and its benzoyl derivative, 2:5-*di*chloro-*di*- and -*tri*-bromo-, and 4:6-*dinitro*-, A., 836.
- pentachloro*-, and *mono*- and *di*-chloro-4-iodo-, and their iodo-dichlorides, A., 837.
- 3-chloro-4-nitro-, picrate, A., 952.
- 3-fluoro-amino- and -6-halogeno-, A., 722.
- 2:4-*di*hydroxy-, A., 738.
- 2:5-*di*hydroxy-, A., 606.
- nitro-, explosion during catalytic reduction of, A., 919.
- p*-nitro-, condensation of, with dichloroacetaldehyde, A., 1054.
- 2:4-*dinitro*-, crystal structure of, A., 551.
- p*-thiocyano-, by-products from preparation of, A., 722.
- and its *mono*- and *di*-nitro-derivatives, A., 474.
- Anisole-1:5-*di*aminonaphthalene, crystal structure of, A., 1116.
- Anisotropic liquids, theory of, A., 895.
- in electric fields, A., 1116.
- double refraction of thin layers of, in a magnetic field, A., 895.
- Anisotropy in magnetic materials, A., 1114.
- 9-*p*-Anisoyl-9-*p*-anisylfluorene, A., 1059.
- Anisoyl-*o*-chlorophenylcarbinol, oxime of, A., 845.
- α -Anisoyl- β -*di*phenylethylene, A., 954.
- 5-Anisoyl-3:4-*di*phenylisooxazole, A., 103.
- 5-Anisoyl-3:4-*di*phenylisooxazoline oxide, and 5-hydroxy-, and its benzoate, A., 103.
- α -Anisoyl- β -*di*phenylpropane, γ -nitro-, α -bromo-derivative, A., 103.
- p*-Anisoyl-3:4-methylenedioxyphenylcarbinol, A., 354.
- p*-Anisoyl-*o*-methoxyphenylcarbinol, and its derivatives, A., 959.
- Anisoylphenylcarbinol, oxime of, A., 845.
- Anisylacetanilide, A., 732.
- Anisyl benzyl ketone, and its oxime, A., 732.
- m*-Anisylboric acid, and its oxide, A., 244.
- Anisyl bromostyryl ketones, and their oximes, A., 224.
- Anisyl *o*-chlorobenzyl ketone *anti*-oxime, A., 732.
- 2-*p*-Anisyl-4-chloromethylthiazole, A., 103.
- 2-Anisyleinchoninic acid, 6:8-*di*bromo-, A., 365.
- β -Anisylglutaconic acid, formation of, and its derivatives, A., 1056.
- Anisylhomoanisylamine, and its salts, A., 1048.
- Anisylhomoveratrylamine, and its salts, A., 1048.
- Anisylidenebenzylamine, A., 1408.
- α -Anisylidene- β -benzylsuccinic acid, and its anhydride, A., 958.
- p*-Anisylidenecyclohexanone, and its oxime, A., 1057.
- Anisylidenehomoanisylamine, A., 1048.
- Anisylidenehomoveratrylamine, A., 1048.
- 9-*p*-Anisylfluorene, and 9-chloro-, and 9-hydroxy-, A., 1059.
- Anisylmercuric salts, A., 244.
- 1-*p*-Anisylmethyl-3:4-*di*hydroisquinoline, A., 1077.
- 1-*p*-Anisylmethyl-1:2:3:4-tetrahydroisquinoline, and 6-hydroxy-, and their hydrochlorides, A., 1077.
- 4-*p*-Anisylloxylaniline hydrochloride, A., 1410.
- 4-*p*-Anisylloxylbenzotriazole, A., 1410.
- 4-*p*-Anisylloxylphenylethylamine, and its hydrochloride, A., 1411.
- 4-*p*-Anisylloxystyrene, ω -nitro-, and its oxime, A., 1410.
- p*-Anisyl-*p*-phenetyl telluridichloride and telluride, A., 244.
- Anisyl styryl ketoxime, and its acetyl derivative, A., 223.
- 2-*p*-Anisylthiazole-4-acetonitrile, A., 103.
- 2-*p*-Anisylthiazole-4-methylamine, and its dihydrochloride, A., 103.
- p*-Anisyl thiocyanomethyl ketone, A., 91.
- 4-*p*-Anisyl-1:3:5-triazine, 2-amino-6-thiol-, and its salts, A., 239.
- Anisyltrimethylammonium bromide, A., 1408.
- α -Anisylvaleric acid, and its lactone, A., 1270.
- Annealing, (P.), B., 811.
- pots for, (P.), B., 814.
- Anodes, sputtering of, A., 784.
- Anodonta cygnea*, constituents of gills of, A., 1081.
- cholesterol in shells of, A., 507.
- Anona reticulata*, alkaloid from, and its salts, A., 242.
- Anona squamosa*, anonaine from, A., 778.
- Anonaine, A., 778.
- and its salts, A., 242.
- Anorthite, equilibrium of, with wollastonite and pyroxene, A., 310.
- Anserine in *Selachii* and *Teleostei*, A., 860.
- Anthanthrone dyes, production of, from acenaphthene, B., 623.
- vat, manufacture of, (P.), B., 106.
- purification of, (P.), B., 151.
- Anthelmintics, manufacture of, (P.), B., 463.
- Anthemis nobilis*, influence of manuring on drug yields and oil content of, B., 312.
- Anthocyan, formation of, in cereals, B., 507.
- Anthocyanins, A., 401.
- constitution of, A., 1162.
- formation of, A., 1099.
- synthesis of, A., 1423.
- distribution number of, A., 1425.
- Anthomyces reukauffii*, in amber, A., 655.
- Anthophyllite, structure of, A., 550.
- Anthracene, constitution of, A., 1044, 1282, 1292.
- structure of shared-resonators in, A., 1351.
- purification of, (P.), B., 195*, 668.
- catalytic oxidation of, (P.), B., 195*.
- action of, in autooxidation of benzaldehyde, A., 1245.
- syntheses with, A., 848.
- synthesis of homologues of, A., 1282.
- mercurichloride, A., 1435.
- derivatives, A., 225, 341, 612, 748, 1058, 1294.
- optical activity of, A., 619.
- detection of, colorimetrically, A., 375.

- Anthracenes, *di*- and *tri*-chloro-, A., 1062.
 Anthracene series, A., 1282.
 9:10-*endo*Anthracene- $\alpha\beta$ -succinic anhydride, *mono*- and *di*-chloro-, A., 1292.
 Anthracite, structure and origin of, A., 818.
 treatment of, (P.), B., 575.
 Pennsylvanian, microscopical and X-ray examination of, B., 790.
*iso*Anthraflavic acid, derivatives of, A., 356.
 Anthrahydroquinone, compound of, with benzaldehyde, A., 355.
 Anthranilic acid, dibenzylpyridylum and dipyridyl salts, A., 740.
 methyl ester, diazonium fluoroborate from, A., 947.
 Anthranols, sulphuric esters of, (P.), B., 386.
 Anthraquinhydrone, potassium derivative, A., 93.
 Anthraquinone, replacement of chlorine by cyanogen in α -position in, A., 846.
 nucleus, introduction of glucosyl into, A., 826.
 sulphonation of, B., 751.
 aminodisulphonates of, A., 1062.
 azo-compounds from, A., 732.
 and amino-, *di*bromo-, and iodo-, additive compounds of, with tin and antimony chlorides, A., 1061.
 derivatives, manufacture of, (P.), B., 753, 1133.
 manufacture of homologues of, (P.), B., 435.
 detection of, colorimetrically, A., 375.
 Anthraquinone, 2-amino-, preparation of, from phthalic anhydride and bromobenzene, B., 964.
 1:5-*di*amino-, insoluble disazo-dyes from, A., 732.
 1-amino-2-thiol-, derivatives of, A., 749.
 1:3-*di*chloro-, preparation of, A., 1420.
 1:4:5:8-*tetrachloro*- and 2-chloro-3-hydroxy-, A., 1063.
 1-chloro-5-amino-, production of, B., 105.
 7-chloro-2-amino-, and 2-nitro-, A., 623.
 1-chloro-4-cyano-, A., 1063.
 4-chloro-1-hydroxy-, A., 846.
mono- and *di*-iodo-, preparation of, A., 1282.
 3-iodo-2:7-*di*hydroxy-, A., 1420.
 Anthraquinones, manufacture of, (P.), B., 336.
 Anthraquinones, amino-, and hydroxy-, hydrogenation of, A., 845.
 1:4-*di*amino-, benzoyl derivative, and chloroamino-, B., 337.
 aminohydroxy-, manufacture of, (P.), B., 195.
 trichloro-, synthesis and orientation of, A., 1062.
 chloroaminohydroxy-, production of, (P.), B., 667.
 halogeno- and hydroxy-, manufacture of, (P.), B., 336.
 hydroxy-, manufacture of, (P.), B., 668.
 reduction products of, A., 355.
 Anthraquinone dyes, for acetate silk and wool, manufacture of, (P.), B., 623.
 for wool, (P.), B., 195, 623, 919.
 acid, manufacture of, (P.), B., 338, 580, 919.
 for wool, (P.), B., 15*.
 phenazine, (P.), B., 239.
 vat, manufacture of, (P.), B., 337, 338, 712, 965, 1004, 1134.
 and their intermediates, (P.), B., 150.
 Anthraquinone glucosides, hydroxy-, nitrogenous derivatives of, A., 940.
 Anthraquinone series, 2:1-thioindigotins from, A., 748.
 Anthraquinone-acridones, halogen derivatives, manufacture of, from anthraquinonylisatins, (P.), B., 668.
 Anthraquinoneacridone dyes, manufacture of, (P.), B., 712.
 vat, manufacture of, (P.), B., 240, 712, 835.
 containing halogen, manufacture of, (P.), B., 966.
 Anthraquinone-1-aldoxime phenyl ether, and 4-chloro-, A., 489.
 Anthraquinoneanilicarboxylic acids, A., 624.
 Anthraquinone-1-carboxyanilide, A., 357.
 Anthraquinone-2-carboxylic acid, 1-chloro-, manufacture of, (P.), B., 13.
 Anthraquinone-4-carboxylic acid, 1-chloro-, methyl ester, A., 1063.
 Anthraquinone-3-carboxylic acids, manufacture of 1-hydroxy- and 1-alkoxy-derivatives of, (P.), B., 918.
 Anthraquinonecarboxylic acids, *o*-amino-, esters, manufacture of, (P.), B., 918.
 Anthraquinonedisulphonic acids, 1-amino-, and *mono*- and *di*-chloro-, and their sodium salts, A., 1062.
 Anthraquinonesulphonic acids, A., 1296; B., 751.
 hydrolysis of, (P.), B., 150.
 Anthraquinonesulphonic acids, 1-amino-, and *mono*- and *di*-chloro-, and their salts, A., 1062.
 Anthraquinone-2-sulphonic acids, 4-halogeno-1-hydroxy-, manufacture of, (P.), B., 476.
 Anthraquinone-1:2:5:6-tetracarboxylic acid, A., 1420.
 and its dimethyl ester, A., 1407.
 Anthraquinone-2:1-thiazole, derivatives of, A., 748.
 Anthraquinone-2-thioglycolic acid, 1-amino-, and 1-cyano-, and their derivatives, A., 748.
 Anthraquinonethioxanthone dyes, vat, (P.), B., 152*.
 2-Anthraquinonylamide, A., 1285.
 α -3-Anthraquinonylmethyl- γ -hydroxymethylcarbamide, α -1:2-*di*-hydroxy-, A., 226.
p-N-1-Anthraquinonylthiolaminodimethylaniline, A., 1295.
N-1-Anthraquinonylthiol-*N'*-methylbenzoquinonedi-imine methonitrate, A., 1295.
 Anthrax, sterilisation of dried hides infected with, B., 129.
 symptomatic, (*blackleg*), action of formaldehyde on filtrate bacterin and aggrassin in, A., 396.
 Anthrone, condensation products of, with crotonaldehyde, A., 1419.
 Anthrone, 2:3-*di*chloro-10-bromo-, and 1:4-*di*hydroxy-, and its salts, A., 1294.
 Anthrones, hydroxy-, manufacture of, (P.), B., 1133.
 α -hydroxy-, manufacture of, (P.), B., 336.
 9-Anthrones, trichloro-, A., 623.
 4-halogeno-1-amino-, and their derivatives, (P.), B., 918.
 10-Anthrones, 2-amino-3-substituted, preparation of, (P.), B., 336.
 Anthrone series, A., 225.
 Anthrone-1-carboxylic acid, 9-bromo-, A., 624.
 Antibodies, separation of, from serum proteins, A., 126.
 Antidiabetics, Chinese, A., 510, 651.
 Anti-freezing mixtures, (P.), B., 616, 1094.
 danger of using methyl alcohol as, B., 613.
 Antigens, nature and specificity of, A., 974.
 bacterial polysaccharides absorbed on collodion as, A., 1335.
 diazotised, A., 111.
 specific, preparation of, from streptococci and pneumococci, A., 395.
 Antiglyoxalase, A., 1455.
 Anti-knock compounds, B., 328.
 behaviour of, A., 690.
 for motor fuels, (P.), B., 236.
 determination of lead tetraethyl in, B., 376.
 Anti-malarials, A., 743.
 Antimony, atomic weight and isotopes of, A., 1208.
 production of, electrolytically, B., 25, 846.
 recovery of, in lead-refining, (P.), B., 539.
 separation of, from sulphide antimony ores, (P.), B., 639.
 removal of, from lead and its alloys, (P.), B., 812.
 from white metals, B., 591.
 and its ores, separation of gold, silver, and lead from, (P.), B., 813.
 electrolytic refining of, (P.), B., 639.
 first spark spectrum of, A., 664.
 Zeeman effect in spectrum of, A., 1344.
 ionised, spectrum of, A., 1104.
 spark spectrum of, A., 1344.
 displacement of, from solutions, by hydrogen under pressure, A., 1242.
 effect of, on copper, B., 494.
 coating of iron and steel with, (P.), B., 119.
 manufacture of stable therapeutic solutions of, (P.), B., 515.
 Antimony alloys with aluminium, A., 158.
 with aluminium and magnesium, B., 1143.
 with cadmium, crystal structure of, A., 671.
 with gold, X-ray structure of, A., 1223.
 with tin, A., 33, 1118, 1364.
 Antimony salts, reduction of, A., 590.
 Antimony bromodiodide, A., 183.
 trichloride, fused, conductivity of dilute solutions in, A., 43.
 pentachloride, dielectric properties of, A., 669.
 co-ordination compounds of, A., 922.
 halides, compounds of, with sulphonium halides, A., 1021.
 triiodide, crystal structure of, A., 549.
 trioxide, production of, (P.), B., 972.
 finely-divided, (P.), B., 588.
 band spectrum of, A., 19, 993.
 oxides, manufacture of, (P.), B., 719.
 trianphido, orange, effect of ions on transformation of, to black, A., 1254.
 sols, coagulation of, A., 682.

- Antimony organic compounds**, A., 855.
 manufacture of, (P.), B., 654, 1155.
 complex, A., 1254.
- Antimony determination and separation** :—
 determination of, with titanous chloride, A., 926.
 in presence of copper, A., 1386.
 in alloys with high copper content, B., 25.
 in lead alloys, B., 254.
 in presence of tin, A., 1262.
 separation of, from copper, electrolytically, A., 57.
 from lead, A., 588.
- Antimony electrodes**. See under **Electrodes**.
- Antimony ores**, sulphide, separation of gold and antimony from, (P.), B., 639.
- Anti-oxidants**, mechanism of action of, B., 211.
- Anti-oxygens**, mechanism of action of, A., 175.
- Antiprophthrombin**, passage of, into blood, after injection of Witte's peptone, A., 249.
- Antipyretics**, analgesic range of, together with soporifics, A., 1453.
- Antipyrine**, condensation product of, with resorcinol, and its dibromo-derivative, A., 627.
 detection of, in presence of pyramidone, A., 99.
- Antiprylazohomophthalimide**, A., 721.
- Antipryliminophthalonimide**, and its derivatives, A., 1414.
- Antirachitic properties and photoactivity**, A., 881.
 substances, A., 129, 881.
 production of, (P.), B., 366.
- Antiricin**, A., 507.
- Antiseptics**, (P.), B., 905.
 manufacture of, (P.), B., 1027.
 influence of, on supply of nutrients in the soil, B., 604.
- Antitoxins**, production of, A., 1460.
- Antitrypsin**, A., 379.
- Antitriase**, A., 1090.
- Apatite**, structure of, A., 550.
 from China, A., 1029.
 Khibinsk, extraction of, by flotation, B., 487.
 production of phosphates from, B., 487, 802.
 production of superphosphate from, B., 392, 586.
- Aphanomyces euteiches**, effect of fertilisers on pea-root rot caused by, B., 1112.
- Aphis**, woolly, nicotine in paint for control of, B., 268.
- Aphis rumicis**, toxicity of rotenone and nicotine to, B., 990.
- Apionic acid**, derivatives of, A., 70.
- Apiose**, constitution and configuration of, A., 70.
- Apophyllite**, structure of, A., 671.
- Aporphine alkaloids**, A., 1077.
- Apples**, electrodialysis in tissues of, A., 883.
 acidity changes and keeping qualities of, B., 272.
 energy value of, in storage, A., 883.
 nitrate fertilisation and keeping quality of, B., 989.
 changes in wax-like coating of, during growth and storage, B., 775.
 effect of light on pigment formation in, A., 1198.
 effect of fungicides on composition of, B., 821.
 dihydroxyphenyl derivative and enzyme in, A., 776.
 antiscorbutic vitamin of, A., 1338.
 vitamin-C content of, A., 531.
 arsenical and other injuries to, from washing, B., 1113.
 removal of arsenical residues from, B., 458.
 spraying of, B., 509.
 winter sprays for control of capsid bugs on, B., 313.
 incidence and control of scab and mildew on, B., 216.
 sulphur dusts for scab control in, B., 1113.
 Baldwin, bud and spur formation in, A., 400.
 Jonathan, catalase activity of, A., 883.
 mammy. See **Sapote**.
 Oldenburg, effect of defoliation on spur and bud formation in, A., 400.
 sampling of, for determination of arsenical spray residues, B., 272.
 determination of arsenic in, B., 1120.
 determination of barium fluosilicate on, after spraying, B., 647.
 determination of sugar in, B., 1120.
 determination of reducing sugars in, iodometrically, A., 535.
- Apple juice**, fermented, distillation of, B., 460.
 unfermented, enzymic clarification of, B., 460.
- Apple pomace**, change in pectin content of, on storage, B., 1120.
- Apple trees**, nutrition of, A., 273.
 effect of summer oil sprays on, B., 509.
- Apple twigs**, respiration of, in relation to winter hardness, A., 532.
- Apricots**, sulphuring of, B., 178.
 effect of drying and sulphuring on vitamin-C content of, B., 461.
- Aquariums**, marine, condition of water in, A., 980.
- Araban**, composition of, A., 70.
- Arabinogalactan** from *Pinus palustris*, A., 716.
- Arabinose**, X-ray examination of, A., 1275.
- Arabinoses**, dibenzyl-, phenyl-*p*-chlorobenzyl-, and phenylbenzylhydrazones, A., 938.
- 4-*o*-Arabinotetrahydroxy-*n*-butyl-glyoxaline**, formation of, from dextrose or levulose, A., 852.
- d-Arabotrimethoxyglutaric acid**, A., 1037.
- Arachidic acid** in cacao butter, B., 850.
- Arachidic anhydride**, A., 1396.
- Arachidonololeno-olein bromide**, A., 602.
- Arachis hypogaea**, (Chinese peanut), biological value of proteins of, A., 118.
- Arachis oil**, separation of acids of, by fractional distillation, B., 211.
 detection of, in "Abrasinol," B., 169.
 determination of sesamé oil in, B., 134.
- Aragonite**, Raman effect in, A., 668.
- β -Aralkylmethylamino- α -hydroxy-*n*-propylbenzenes**, optically active, manufacture of, (P.), B., 13.
- Arbacia**, effect of salts on surface precipitation in eggs of, A., 518.
- Arbacia punctulata**, osmotic properties of eggs of, A., 380.
- Arcaïne**, and its derivatives, A., 1178.
 origin of, A., 1442.
 bacterial fission of, A., 1321.
- Arctium lappa**, carbohydrate in roots of, A., 776, 1326.
 glycogen storage in white rats fed on roots of, A., 386.
- Ardealite**, isomorphism of, with gypsum, A., 1359.
- Arenicola marina**, respiration and haemoglobin function in, A., 1439.
- Argentite**, crystal structure of, A., 789.
- Argentoargentic nitrate**, A., 234.
- Arginase**, action of, A., 393.
 effect of oxygen, carbon dioxide and cysteine on, A., 1332.
- Arginine** in invertebrates and vertebrates, A., 1178.
 precipitation of, from proteins, A., 1317.
 metabolism of. See under **Metabolism**.
 effect of, on growth of tumours, A., 760.
 degradation of, in rats and its determination, A., 762.
- Argon**, refraction in, A., 898.
 spectrum of, A., 136.
 negative glow spectrum of, A., 887.
 extreme ultra-violet spectrum of, A., 6.
 ionised, spectrum of, A., 276, 779.
 after-glow spectrum of mixtures of nitrogen and, A., 5.
 photography of spectra of, A., 1103.
 scattering of X-rays by, A., 1105.
 scattering of slow electrons in, A., 542.
 energy loss and scattering of electrons by, A., 1206.
 motion of electrons in, A., 406.
 effective cross-section of, for slow electrons, A., 406.
 with respect to positive ions, A., 1348.
 collisions of atoms of, with electrons, A., 12.
 excitation of electrons in, A., 1206.
 ionisation of, A., 1105.
 by alkali ions, A., 542, 1206.
 by electron impact, A., 10.
 multiply-charged ions in, A., 10.
 accommodation coefficients of positive ions of, A., 992.
 sparking potentials of mixtures of, with nitric oxide, A., 1344.
 temperature of positive column in, A., 404.
 solubility of, at high pressures, A., 1365.
 equation for mixtures of ethylene and, A., 554.
 ignition of mixtures of methane and, A., 1240.
 recovery of, from liquid air, (P.), B., 1140.
- "Aroclors,"** B., 105.
- Aromatic compounds**, electron theory of, A., 1356.
 synthesis of, at high pressure, (P.), B., 1133.
 directive power of groups in substitution in, A., 479.
 activation of halogens in nuclei of, by nitroso-groups, A., 945.
 action of aliphatic oxides on, A., 1281.
 action of aromatic alcohols on, in presence of aluminium chloride, A., 83, 1047.
 manufacture of *C*-alkyl and *C*-aralkyl derivatives of, (P.), B., 290.
 influence of diet on fate of, in the organism, A., 1183.

- Aromatic compounds, containing halogens, replacement of halogen by amino-groups in, (P.), B., 622.
determination of nitro-groups in, microchemically, A., 1318.
Arrack, evaluation of, B., 859.
ester value of, B., 177.
Arrhenius' law, application of, in biology, A., 134.
p-Arsenic acid. See Phenylarsinic acid, *p*-amino-
Arsenic, recovery of, in lead-refining, (P.), B., 539.
separation of, from acids, (P.), B., 757.
radical, quadrivalent, existence of, A., 750.
ionised, spectrum of, A., 276, 1104.
displacement of, from solutions, by hydrogen under pressure, A., 1242.
effect of, on copper, B., 494.
removal of, from sprayed fruit, B., 458.
distribution of, in human bones, A., 1187.
Arsenic alloys with copper, X-ray structure of, A., 418.
Arsenic compounds, water-soluble, in sprays, B., 269.
with sulphur, separation of, from gases, (P.), B., 1139.
Arsenic trichloride, action of, on nickel, A., 810.
on ethyl sodiomalonate, A., 832.
with alkyl Grignard reagents, A., 77.
trihydride (*arsine*), structure of, A., 150.
poisoning by. See under Poisoning.
hydrides, A., 809.
triiodide, structure of, A., 549, 1115.
preparation of, A., 323, 1381.
hydrolysis of, B., 199.
stabilisation of solutions of mercuric iodide and, B., 274.
Arsenious acid, caustic action of, A., 1187.
reaction of, with iodine, A., 916.
effect of, on tissue respiration, A., 1454.
use of iodine catalyst in titration of permanganate and, A., 1258.
permanence of standardised solutions of, A., 326.
Arsenites, buffering power of, A., 652.
action of, on tissue respiration, A., 260.
determination of, A., 326.
Arsenic acid, reduction of, by hydrogen, in presence of alkali, A., 52.
and its salts, at mercury cathodes, A., 440.
Arsenates, buffering power of, A., 652.
Arsenides, A., 1022.
Arsenic trisulphide, colloidal, colour of, A., 906.
action of hydrochloric acid on, A., 304.
sols, coagulation of, A., 1124.
precipitation potential of, A., 37.
Arsenic organic compounds, A., 372, 751.
manufacture of, (P.), B., 654.
manufacture of formaldehyde-bisulphite derivatives of, (P.), B., 863.
aliphatic, A., 472.
aromatic, containing sulphur groups attached to the nucleus, A., 244, 1434.
complex, A., 1254.
heterocyclic, oxidation of, A., 372.
non-irritant, for injections, manufacture of, (P.), B., 45.
Arsenic detection and determination:—
detection of, with modified Gutzeit test, A., 1024.
determination of, with titanous chloride, A., 926.
volumetrically, A., 637; B., 313.
in insecticides, B., 908.
in apples by the Gutzeit test, B., 1120.
in biological material, A., 134.
in bismuth and barium salts, B., 199.
in mixtures with copper, iron, and mercury, A., 1142.
in pharmaceutical mixtures, B., 44.
in white metals, B., 1057.
Arsenicals, effect of, on oxygen consumption of tissues, A., 763.
Arsenobenzene, biological standardisation of derivatives of, A., 982.
Arsenobenzene, diamino-, manufacture of *N*-acyl derivatives of, (P.), B., 135.
3:3'-diamino-4:4'-dihydroxy-5:5'-diiodo-, diacetyl derivative, (P.), B., 180*.
3:3'-diamino-4:4'-dithiol-, A., 1434.
Arsenobenzenes, aminohydroxy-, manufacture of acyl derivatives of, (P.), B., 863.
hydroxy-, production of thiosemicarbazones of, (P.), B., 223*.
5:5'-Arseno(benzimidazole-2-sulphonic acid), A., 106.
5:5'-Arseno(2-carbamylthiolbenzimidazole), A., 106.
5:5'-Arseno(2-carboxymethylthiolbenzimidazole), A., 106.
Arsenoferrite from Czechoslovakia, A., 817.
Arsenoklasite from Langban, A., 1028.
5:5'-Arsenopyridine, 4:4'-dihydroxy-, and its dihydrochloride, A., 1315.
Arsenopyridines, A., 372.
3:3'-Arseno-2:2'-pyridone, A., 1072.
3:3'-Arseno-2:2'-pyridone, *NN*-diamino-, diacetyl derivative, A., 1315.
Arsepedine, 1:1:1-tribromo-, A., 750.
Arsine. See Arsenic trihydride.
Arsines, dichloro-, aliphatic, formation of, from 10-alkyl-5:10-dihydrophenarsazines, A., 1434.
Arsinic acids, action of hydrobromic acid on, A., 105.
of the fluorene series, A., 637.
aromatic, manufacture of, (P.), B., 742.
Arsinoacetic acid, reaction between polyhydric alcohols or phenols and, A., 297.
Arsinofluorene, 2-dichloro-, A., 637.
p-Arsinomalonanilic acid, and dichloro-, A., 1078.
p-Arsinomalonanilide, A., 1078.
3-Arsinopyridine-2-carboxylic acid, and its derivatives, and dichloro-, hydrochloride of, A., 372.
Arsinosuccinanilic acid, *p*-dichloro-, A., 636.
Arsinosulphides, preparation of, A., 1404.
p-Arsonomalonanilic acid, and its derivatives, and *p*-dichloro-, A., 1078.
p-Arsonosuccinanilic acid, A., 636.
Artemia salina, salt effects on eggs and nauplii of, A., 1088.
Artemisia capillaris, asculetin dimethyl ether in fruit of, A., 401.
Artemisia heterophylla, constituents of, A., 536.
Artemisin, distinction between santonin and, A., 961.
Arteries, human, collagen substances in, A., 1442.
Arthritis, chronic, faeces in, A., 864.
Artichokes in diet for diabetes, A., 1180.
Artificial masses, manufacture of, (P.), B., 405.
Arundo phragmites. See Grass, reed.
4-Aroylbenzantrones, manufacture of, (P.), B., 239.
Aryl alkyl-ethers and -thioethers, manufacture of chloromethyl derivatives of, (P.), B., 711.
iododifluorides, action of, on organic compounds, A., 611.
naphthylalkyl ethers, and their sulphonic acids, manufacture of, (P.), B., 58*.
Arylacetic acids, synthesis of, A., 1292.
Arylamines, manufacture of, (P.), B., 622.
Arylamino-alcohols, production of, (P.), B., 698.
Arylaminoanthraquinone derivatives, manufacture of, (P.), B., 239.
 β -Arylaminoacetic acids, esters, formation of 4-hydroxy-2-methylquinolines from, A., 851.
 δ -Arylamino-2-naphthols, manufacture of, (P.), B., 386.
5-Arylamino-2-naphthols, manufacture of, (P.), B., 58.
manufacture of arylamides of, (P.), B., 58.
Arylarsinic acids, *o*-nitro-, manufacture of, (P.), B., 905.
Aryl-2-benzthiazolyl disulphides, manufacture of, (P.), B., 834.
Arylboric acids, preparation of, A., 244.
 β -Arylethylamines, synthesis of, A., 616.
N-Arylmorphthalimides, preparation of, A., 1155.
Arylhydrazines, condensation of, with butyl chloral hydrate, A., 722.
Arylperihydrofuranthroxyls, hydroxy-, A., 845, 846.
 ω -Arylideneacetanilides, ω -cyano-, formation of, and conversion of their *o*-nitro-derivatives into quinoline derivatives, A., 236.
Arylmethylglyoxime peroxides, structure of, A., 225.
1-Aryl-5-methylpyrazoles, 4-hydroxy-, A., 742.
Aryl-1-nitro-2-keto-1:2-dihydro- α -naphthyl sulphides. See Quinonitroles.
Aryloxides, substituted ammonium derivatives, reactions of, A., 834.
 α -Aryloxyalkyl esters, manufacture of, (P.), B., 1040.
 β -Arylpropionic acids, synthesis of, A., 1292.
Arylperipyrrolinoanthranolazyls, existence of, as free radicals, A., 1073.
Arylquinolines, manufacture of aminoalkoxy-derivatives of, (P.), B., 946.
Arylsulphonalkylamides, preparation of, A., 340.
Arylsulphonic acids, ethyl esters, preparation and hydrolysis of, A., 339.

- Arylsulphonylalkylammonium salts, quaternary, A., 1151.
 Arylthiazole compounds, amino-, manufacture of, (P.), B., 667.
 Arylthiocarbimide polysulphides, A., 1407.
 β -Asarylpropionic acid, α -hydroxy-, benzoyl derivative, A., 484.
 Asbestos, production of, (P.), B., 882.
 preparation of, for filtration, B., 270.
 for Gooch crucibles, content of iron in, A., 331; B., 536.
 soda-rich anthophyllite, from California, A., 817.
 sheets, treatment of, (P.), B., 66.
 determination of organic fibres in products of, B., 478.
 Ascaridole, A., 735.
 Ascigenin, and its bromo-derivative, A., 1159.
 Ascitic fluid, distribution of chloride and bicarbonate between plasma and, A., 1179.
 Asparagine, *cyclodipeptides* of, A., 1430.
 derivatives, crystallography of, A., 151.
dl-Asparagine, derivatives of, A., 77.
 Asparagines, benzenesulphonyl derivatives of, A., 77.
 Asparagus, vitamin-A content of, A., 772.
dl-Aspartic acid, synthesis of, A., 76.
Aspergillus, action of carbon dioxide on growth of, A., 1092.
 yeast growth stimulants for, A., 1192.
 colouring matters of, A., 264.
 fermentation by, A., 1092.
 production of mannitol by, A., 1458.
 in cotton goods, B., 581.
 elimination of, from cotton, B., 477.
Aspergillus flavus, effect of copper, manganese, and zinc on growth of, A., 876.
 production of kojic acid by, A., 524.
Aspergillus fumigatus, degradation of salts of organic acids by, A., 465.
Aspergillus niger, culture of, B., 215.
 effect of reaction of Raulin's medium on, A., 394.
 nutrient growth curves for, A., 1092.
 growth of, and its absorption of copper, A., 264.
 effect of nickel and cobalt on development of, A., 655.
 zinc as nutrient for, A., 1458.
 production of a growth regulator by, A., 1334.
 autolysis of, A., 1092.
 formation of acids by, A., 524.
 variations in fatty acids of, A., 125.
 citric fermentation by, A., 264, 1333.
 dextrose-oxidase from, A., 653.
 lipase of, A., 264.
 distribution of magnesium in mycelium of, A., 1092.
 unsaponifiable matter and lipoidal phosphorus in, A., 264.
Aspergillus oryzae, influence of acetate and phosphate on amylase activity of, A., 1092.
 resorption of ammoniacal and nitrate nitrogen by, A., 125.
 formation of kojic acid from trioses by, A., 525.
 Asphalt, manufacture of, (P.), B., 577.
 by oxidation of petroleum hydrocarbons, (P.), B., 471.
 from residues from cracking processes, B., 707.
 apparatus for, from asphaltic oils, (P.), B., 145.
 recovery of, from residues from petroleum distillates, (P.), B., 1002.
 treatment of, (P.), B., 1037.
 destructive hydrogenation of, (P.), B., 709.
 heating of, by diphenyl vapour, B., 829.
 emulsifying action of fillers containing, B., 806.
 fillers of, for pavings, (P.), B., 441.
 determination of saponification values of, and of its mixtures with drying oils, B., 307.
 use of, for wound treatment of rubber trees, B., 171.
 suitability of, for building and road construction, B., 974.
 production of composition of, (P.), B., 680.
 mastic, manufacture of, B., 1052.
 applications of, in chemical works, B., 1052.
 natural, from Strečno in Slovakia, B., 230.
 precipitated, determination of, by vacuum filtration, B., 283.
 detection and determination of rubber in its mixtures with, B., 769.
 determination of asphaltene in, B., 52.
 determination of bitumen in, B., 1033.
 determination of paraffin in, B., 100, 524.
 Asphalt paper. See under Paper.
 Asphalt shingles, B., 396.
 Asphaltenes, solubility of, B., 617.
 elimination of, from fuel oil, (P.), B., 55.
 determination of, in asphalt, B., 52.
 Asphyxia, changes in blood chloride in, A., 375.
 Assimilation, plant. See under Plants.
 Asters, China, treatment and storage of seeds of, B., 899.
Asteriasigma macrocarpa, oil from seed of, B., 551.
 chaulmoogra oils from, B., 552.
 Asymmetric compounds, syntheses of, A., 619.
 Asymmetric induction, A., 482.
 "Athrombit," an anti-coagulant, A., 379.
 Atmosphere, ionisation in, at Co. Wicklow, A., 1346.
 in confined spaces, reduction of moisture content of, (P.), B., 522.
 ozone in, A., 49, 1265.
 upper, A., 1265.
 See also Air.
 Atoms, structure of, and light emission, A., 405.
 photographic measurements of, A., 18.
 factor curves for, A., 18.
 volumes and models of, A., 1214.
 size of, and their optical rotation, A., 1355.
 and isomorphism, A., 1005.
 determination of radii of, A., 1000.
 determination of radii and distances of, A., 894.
 dimensions of, and quantum theory, A., 143.
 measurement of active diameters of, A., 12.
 distribution of electrons in, A., 18.
 electronic orbits in, A., 18.
 photo-electric effect of, in the *k*-shell, A., 1346.
 excitation of, by fast electrons, A., 1347.
 disintegration of, A., 16, 281, 995.
 experimental technique for, A., 891.
 nuclei of, and their structure, A., 544, 784, 1208.
 structure and moment of, A., 786.
 existence and stability of, A., 1349.
 statistics of, A., 544.
 arrangement of, A., 1108.
 quantum-mechanical models of, A., 1209.
 periodicity of, A., 1349.
 dynamics of, A., 407.
 action of radiation on, A., 784.
 nuclear processes of, A., 784.
 recombination of, A., 17.
 properties of layers of, A., 1207.
 trapping of, in a magneto-cathodic or cathodic beam, A., 7407.
 reflexion of, from crystals, A., 14.
 addition potentials and spectra of, A., 18.
 scattering of, A., 1206, 1348.
 scattering factors of, for X-rays, A., 889.
 scattering of electrons by, A., 11.
 electric charges in, A., 18.
 calculation of frequencies of, A., 1219.
 mean free path of, A., 1217.
 energy levels of, in electric field, A., 2.
 internal conversion of nuclear energy of, A., 139.
 quantum mechanics of collisions of, A., 666.
 transfer of energy on collision of, A., 282.
 low-velocity inelastic collisions between, A., 1109.
 radiation-less collisions between molecules and, A., 783.
 repulsion of, in relation to cohesion, A., 791.
 density matrix in, A., 667.
 and atomic groups, isomorphous replaceability of, A., 1363.
 with *s*-electrons, interaction between, A., 1109.
 reactions of, A., 174, 999.
 surface reactions of, A., 1247.
 alkali-like, quantum defects for non-penetrating orbits of, A., 17.
 excited, reaction inertia of, A., 1014.
 hydrogen-like, fine structure of, in inhomogeneous electric field, A., 275.
 separation of lines in spectra of, A., 4.
 graphic representation of electron cloud for, A., 889.
 ionised, spectra of, A., 751.
 light, scattering of α -particles by, A., 407.
 many-electron, wave functions of, A., 1109.
 non-polar, van der Waals attractions between, A., 1216.
 radioactive. See Radioactive atoms.
 recoil, in gases, A., 279.
 stripped, spectra of, A., 1104.
 Atomic number and X-ray scattering coefficient, A., 3.
 and heat of formation, A., 1370.
 Atomic volume. See under Volume.
 Atomic weight of antimony, A., 1208.
 of boron, A., 1208.

- Atomic weight of bromine, A., 141, 1208.
 of caesium, A., 783.
 of calcium, from sylvine, A., 279.
 of chlorine, A., 1108, 1208.
 of chromium, A., 280.
 of fluorine, A., 1207.
 of germanium, A., 1208.
 of iodine, A., 543, 1208.
 of krypton, A., 666.
 of molybdenum, A., 280.
 of nitrogen, A., 407.
 of osmium, A., 1208.
 of oxygen, A., 543.
 of potassium, from plant ash, A., 141.
 of rhenium, A., 1208.
 of ruthenium, A., 1208.
 of selenium, A., 1208.
 of silver, A., 407.
 of sulphur, A., 279.
 of tellurium, A., 1208.
 of thallium, A., 141, 1348.
 of tin, A., 280.
 of tungsten, A., 1208.
 of uranium-lead, A., 279.
 of xenon, A., 890.
 of zinc, A., 280.
- Atomic weights, report of International Committee on, A., 783.
 report of German commission on, A., 279.
 unit for, A., 141.
 helium as basis for, A., 15.
 adsorption in determination of, A., 297.
 fundamental, A., 1208.
- Atomisers, (P.), B., 788, 912, 1126.
 for liquids, (P.), B., 1030.
 centrifugal, for sulphuric acid, etc., (P.), B., 156.
 liquid, for spectroscopy, A., 815.
- Atophan, effect of, on distribution of fluorescein in tissues, A., 870.
 detection of, B., 90.
- Attractylic acid, potassium salt, A., 1341.
- Atractylis gummifera*, constituents of roots of, A., 1341.
- Atromentin dimethyl ether. See 2:5-Dianisylbenzoquinone, 3:6-dihydroxy-.
- Atropine, effect of, on blood-sugar, A., 981.
- Augite, titaniferous, from Rajputana, A., 595.
- Aurocamphordithiocarbonic acid, A., 736.
- Aurora, theory of, A., 135.
- Austenite, transformation of, A., 159.
 formation of ferrite from, B., 635.
 determination of, in quenched steel, B., 1053.
- Autocatalysis, effect of concentration and promoters on, A., 1134.
- Autoclaves, testing of ceramic products in, B., 247.
 laboratory, A., 706.
- Auto-ignition, apparatus for determination of tendency to, B., 466.
- Autoxidation, A., 334.
 and polymerisation, A., 1031.
- Avena sativa*. See Oats.
- "Avertin," detoxication of, A., 120, 650.
- Avitaminosis, A., 1339.
 hematopoietic function in, A., 1464.
 polyneuritic, in pigeons, effect of carbohydrates on, A., 1196.
- Avitaminosis-B, diet for, A., 530.
 biochemical lesions in, A., 1338.
 esterification of phosphoric acid in, A., 530.
 pathogenesis of, A., 1464.
 ternary substances in blood during, A., 660.
- Avitaminosis-B₁, blood-sugar level in, A., 1464.
- Avitaminosis-E, basal metabolism of rats in, A., 1339.
- Avogadro's number, A., 1217.
- "Awobana," colouring matter of, A., 777.
- Azafraan root, polyene pigments of, A., 492.
- Azafrin, and its derivatives, A., 492.
- Azeotropism, A., 1363.
 dynamic, A., 565, 566, 676, 1118, 1363.
- Azides, structure and dipole moments of, A., 1359.
 determination of, argentometrically, A., 186.
- Azine dyes, manufacture of, (P.), B., 106.
- Azlactones, absorption spectra of, A., 367.
- Azobenzene, action of magnesium and magnesium iodide on, A., 721.
- Azobenzene, amino-, formation of, from diazoaminobenzene, A., 951.
p-amino-, fluosilicate of, A., 612.
di- and *tetra*-chloro-, A., 1283.
- Azobenzenearsinic acids, *mono*-, *di*-, and *tri*-hydroxy-, and their sodium salts, A., 636.
- Azochromophores, A., 721.
- Azo-compounds, with affinity for cotton, manufacture of, (P.), B., 240.
 aromatic, spatial configuration of, A., 82.
 arsenical, A., 105.
 determination of nitrogen in, A., 1437.
- Azo-compounds, amino-, containing β -naphthol, production of, (P.), B., 13.
 amino- and hydroxy-, metallic derivatives of, A., 835.
 o-amino-, reaction of, with phthalic anhydride, A., 744.
 hydroxy-, molecular compounds of, with acid halides, A., 613.
 o-hydroxy-, constitution of, A., 951.
- Azo-o-coumaric acid, A., 1409.
- 6-Azocoumarin, A., 1409.
- p*-Azodiphenyl sulphide, A., 487.
- Azo-dyes, A., 1285; B., 152*.
 and their intermediates, A., 343.
 manufacture of, (P.), B., 151, 339, 580, 798, 834.
 from homophthalimide, B., 965.
 use of *anti*-diazotates in, B., 963.
 and intermediates, (P.), B., 291.
 and their application, (P.), B., 580, 624.
 fastness to light of, A., 806.
 effect of lactonic ring on colour of, A., 1409.
 manufacture of chromium compounds of, (P.), B., 14.
 hydrogen sulphite compounds of, A., 951.
 manufacture of metallic complex compounds with, (P.), B., 14.
 containing chromium, manufacture of, (P.), B., 240, 339.
 containing metals, (P.), B., 151, 152*, 550.
 from arsanilic acids, A., 636.
 from diazotised aminocanthranol sulphuric esters, (P.), B., 386.
 of the dinaphthyl series, B., 797.
 from cyclohexane derivatives, (P.), B., 239.
 for cellulose esters or ethers, production of, (P.), B., 966.
 for chrome leather, (P.), B., 291.
 for lakes, manufacture of, (P.), B., 435.
 for silk, manufacture of, (P.), B., 1134.
 for wool, etc., manufacture of, (P.), B., 14, 531, 713.
 for wool and leather, (P.), B., 291.
 for wool and silk, manufacture of, (P.), B., 240.
 acid, manufacture of, (P.), B., 106, 435.
 for wool, manufacture of, (P.), B., 151.
 acid and mordant, manufacture of, from pyrazolonecarboxylic amides, (P.), B., 624.
 chrome, manufacture of, (P.), B., 1042.
 direct, manufacture of, (P.), B., 151.
 containing copper, manufacture of, (P.), B., 151.
 for cotton, (P.), B., 290.
 fast, for wool, manufacture of, (P.), B., 58.
 insoluble, manufacture of, (P.), B., 14, 580.
 properties and constitution of, B., 483.
 action of boiling caustic soda on, B., 484, 800.
 yellow, manufacture of, (P.), B., 713.
 containing chromium, manufacture of, (P.), B., 713.
 wool, manufacture of, (P.), B., 476.
 water-soluble, for lakes and wool, (P.), B., 240*.
- Azo-dyes, o-hydroxy-, containing chromium, manufacture of, (P.), B., 151.
- Azo-N-ethyldiphenylamine, amino-, A., 1307.
- Azo-indicators. See under Indicators.
- Azomethine dyes, from 4:4'-dihydroxydiphenyl-3:3'-dialdehyde, A., 1056.
- p*-Azo- β -naphthylaminobenzoic acid, diethylaminoethyl ester, and its derivatives, A., 1431.
- Azonium iodides, quaternary, substituted, A., 1284.
- o-Azophenols, group influence on colours of, A., 82.
- Azoproteins, effect of structure on specificity of, A., 111.
- Azotobacter*, respiration of, A., 986.
 inoculation experiments with, B., 508.
 relation between development of, and buffer power of soils, B., 601.
 ammonia production and nitrogen fixation by, A., 986, 1459.
 effect of calcium and strontium on fixation of nitrogen by, A., 1334.

Azotobacter, influence of nitrogen on growth and nitrogen fixation by, B., 557.
 transformation of nitrogen from, in soils, B., 773.
 influence of silica gel on assimilation of phosphorus by, A., 265.
 in soils, B., 857.
 in Moravian soils, B., 601.
Azotobacter chroococcum, effect of nitrogenous fertilisers on occurrence of, in soils, B., 690.
 3-Azoxycenaphthene, A., 82.
p-Azoxyanisole, X-ray structure of, A., 290, 1002, 1116.
 magnetic birefringence of, A., 24.
 liquid crystalline, X-ray study of magnetic character of, A., 1218.
 Azoxybenzene, preparation of, A., 835.
 action of magnesium and magnesium iodide on, A., 721.
 Azoxybenzene, bromo-*a-p*-nitro-, constitution of, A., 1046.
 3:4:3':4'-tetrachloro-, A., 79, 1046.
 Azoxy-compounds, manufacture of, (P.), B., 238.
 absorption spectra and constitution of, A., 892.
 with affinity for cotton, manufacture of, (P.), B., 240.
 4-Azoxo-*N*-ethylidiphenylamine, 2-nitro-, A., 1307.
o-Azoxyveratrole, A., 1411.
 Azulene, A., 1301.
 Azurite, morphology of, A., 707.

B.

Bacilli, increase in toxicity of, by fermentation, A., 395.
 Bordet's, effect of, on rabbit's blood, A., 395.
 diphtheria, lipins of, A., 1459.
 porphyrins in cultures of, A., 986.
 gas-gangrene, toxin of, A., 395.
 influenza, differentiation of, by the peroxidase method, A., 395.
 timothy-grass, separation of lipoids from, A., 526.
 nucleic acid from, A., 526.
 polysaccharide from, A., 1335.
 timothy-grass and tubercle, production and transformation of methylglyoxal by enzymes of, A., 1193.
 tubercle, culture of, A., 395.
 variability of, A., 1459.
 effect of p_H on growth of, A., 266.
 antigenic substances of, A., 126.
 carbohydrates from, A., 1335.
 cyto-vaccine of, (P.), B., 275.
 action of fat-splitting enzyme from guinea-pig's lungs on, A., 770.
 control of growth of, in the body, by glycerol and palmitic acid, A., 1335.
 lipins of, A., 266, 526, 770.
d-mannose and *d*-arabinose in culture media from, A., 770.
 ammonium malate as source of nitrogen for, A., 1336.
 action of pancreatic juice on, A., 986.
 effect of constituents of, on connective tissues of rabbits, A., 526.
 effect of acetone extracts of, on tubercle virus, A., 986.
 detection of, in milk, B., 133, 513.
Bacillus acetoethylicus, fermentation of rice straw by, B., 511.
Bacillus aertrycke, effect of injection of suspensions of, on blood-sugar and -phosphorus, A., 1335.
Bacillus carotovorus, decomposition of carrot pectins by, A., 1100.
Bacillus coli aerogenes, tests for, A., 1192.
 gas production and determination of p_H of, in sugar broths, B., 656.
Bacillus coli communis, respiration of, A., 395, 986.
 relation between respiratory catalysts of, A., 769.
 effect of p_H on oxidation by, A., 769.
 oxidation-reduction potentials in cultures of, A., 1334.
 effect of bacteriophage on potentials of cultures of, A., 1461.
 antiseptic action of lactic acid on, A., 986.
 reduction of nitrates by, A., 1459.
 proteins and lipins formed by, A., 770.
 indole method for identification of, A., 395.
 detection of, in water, A., 656; B., 225.
 determination of, in milk, B., 271.
Bacillus dysenteriae, effect of bacteriophage on potential of cultures of, A., 1461.
Bacillus gelaticus, decomposition of hemicelluloses by, A., 986.

Bacillus pyocyaneus, degradation of citric and succinic acids by, A., 526.
Bacillus rhamnosifermentans, A., 1334.
Bacillus thermofibrincolus, fermentation of cellulose by, A., 265.
Backhousia angustifolia, essential oil of, A., 487.
 Bacon, chilled and frozen, changes in fat of, B., 992.
 Bacteria, cultivation of, A., 1459.
 gas-metal electrode potentials in sterile culture media for, A., 527.
 chemistry of, A., 770, 1459.
 mechanism of action of, A., 396.
 action of mitogenetic radiation on, A., 1095.
 specific action of cations on, A., 1193.
 action of dyes on, A., 126.
 resistance of, to dyes, A., 770.
 staining of flagella of, A., 771.
 action of hydrogen sulphide on, A., 396.
 effect of heavy metal salts on, A., 1461.
 effect of inorganic salts and X-rays on, A., 878.
 effect of simple non-nitrogenous salts on growth of, in soils, B., 1110.
 effect of yeast on ammonia and indole production by, A., 876.
 adsorption of bacteriophage by, A., 656.
 utilisation of substituted carbohydrates by, A., 264.
 cholesterol in, A., 266.
 growth regulators from, A., 1091.
 decomposition of hemicelluloses by, A., 1192.
 production of lactic acid by, A., 1459.
 reduction of nitrates by, A., 265.
 decomposition of peat by, A., 265.
 catalysis of oxidation of phenols by, A., 265.
 quantity of cystine in protein of, A., 265.
 action of, on uric acid and its derivatives, A., 1459.
 decomposition of plant tissues by cultures of, A., 1333.
 chemotherapy of infection by, A., 878.
 metabolism of, A., 264.
 derivatives of, A., 1335.
 acetic, A., 769.
 oxidation of alcohols by, A., 1334.
 killed, oxidases of, A., 1192.
 acidoproteolytic, in pasteurised milk, A., 126.
 coal, B., 228.
 gelatin-liquefying, proteolytic enzymes of, A., 1095.
 gram-positive, staining of, A., 1460.
 lactic, formation of hydrogen peroxide by, A., 394.
 action of free oxygen on, A., 1334.
 leguminous, and plants, A., 1101.
 nitrogen-fixing, A., 769.
 in soils, B., 645.
 non-symbiotic, B., 82.
 nodule, glycuronic acid from gum of, A., 395.
 fixation of nitrogen by, A., 876.
 effect of caffeine on, A., 265.
 on leguminous plants, A., 660.
 oxybiotic, metabolism of, A., 395.
 propionic, production of acids in fermentation by, A., 394.
 physiological action of, A., 656.
 proteolytic, in milk, A., 876.
 resting, A., 264.
 soil, influence of inorganic iodine compounds on, B., 361.
 nitrite formation by, A., 986.
 decomposition of oat straw by, B., 312.
 aerobic, cellulose-decomposing, A., 265.
 non-symbiotic, nitrogen-fixing, spontaneous culture study of, B., 559.
 Bactericides, (P.), B., 622, 823, 899.
 heterocyclic azo-compounds as, (P.), B., 463.
 ether, alcohol, chloroform and carbon disulphide as, B., 1118.
 ethereal oils as, B., 700.
 mercury, manufacture of, (P.), B., 275.
 Bacteriological media, determination of p_H in, A., 1095.
 Bacteriolysins, insect, A., 877.
 Bacteriophage, A., 126.
 theories of, A., 396.
 electrical behaviour of, A., 396.
 purification of, A., 267.
 detachment of, from carrier particles, A., 986.
 adsorption of, by bacteria, A., 656.
 balanced salt action with, A., 396.
Bacterium acidificans, production of lactic acid by, A., 1459.

- Bacterium bulgaricum*, production of lactic acid by, A., 1459.
 Badan root, drying equipment for, B., 265.
Backea frutescens, essential oil from, B., 698.
 Bagasse, effect of gases from, on furnace walls, B., 21.
 utilisation of, by dry distillation, B., 737.
 manufacture of wall board from, (P.), B., 634.
 Baicalin, orientation of glycuronic acid in, A., 493.
 Bakelite, formation of, in condensation of formaldehyde and phenol, A., 937.
 Bakery products, production of, (P.), B., 695.
 leavened, production of, (P.), B., 272.
 Baking, influence of method of moulding on loaf volume in, B., 738.
 examination and detection of chemicals used in, B., 738.
 of sweetened bakery products, (P.), B., 1073.
 Baking powder, (P.), B., 513.
 composition to improve keeping quality of, (P.), B., 780.
 preparation of lactic acid for use in, (P.), B., 415.
 containing alum, toxicity of, A., 119.
 determination of carbon dioxide in, B., 41, 512.
 Baking tests, fermentation and proofing cabinet for, B., 695.
 experimental, B., 461.
Balanoptera physalus, glycerides from, A., 602.
 Balance, automatic, A., 816.
 micro-, A., 59, 189.
 modified, for approximate and quick weighing, A., 455.
 Mohr-Westphal, conversion of, A., 1264.
 Balanites, oil from seeds of species of, B., 401.
Balanites mayumbensis, oil from seeds of, B., 816.
 Balata, X-ray investigation of, B., 74, 643.
 refined, manufacture of, (P.), B., 503.
 heat of combustion of, B., 35.
 treatment of, for insulation, (P.), B., 76.
 production of aqueous emulsions of, (P.), B., 504.
 Ballo-electric effect at gas-solution boundary, A., 300.
 Balloon fabrics, treatment of, to render impermeable, (P.), B., 17.
 coating of, (P.), B., 585.
 gasproof, (P.), B., 535, 628*.
 Balsam, Canada, formation of pinabietic acid from, A., 1297.
 Peru, dry distillation of, B., 984.
 detection of artificial balsams in, B., 416.
 tolu, dry distillation of, B., 502.
 assay of, B., 862.
 Bamboo, chemistry of, B., 1005, 1087.
 biochemistry of, A., 130, 661.
 acetolysis of cellulose of, B., 478.
 pentosans in, B., 1005.
 Bananas, osmotic pressure of, during ripening, A., 882.
 effect of acetylene on ripening of, B., 992.
 formation of starch in, A., 130.
 fermentation of, B., 459.
 Banana plantations, sodium chlorate as weed-killer in, B., 215.
 Bandages, used, treatment of, (P.), B., 223.
 Barberries, use of oxides of unsaturated hydrocarbons for eradication of, B., 1150.
 Barbitol. See Diethylbarbituric acid.
 Barbituric acid, ultra-violet absorption spectrum of, A., 784.
 derivatives, manufacture of, (P.), B., 366, 824, 946.
 action of bromine and iodine on, A., 1308.
 detection of, in presence of succinic acid, A., 981.
 detection and separation of, A., 1328.
 Barite, X-ray spectrum of, A., 671.
 Barium, isotopes of, A., 1108.
 L-series spectrum of, A., 889.
 Zeeman effect in resonance spectrum of, A., 1345.
 transport number of, in its amalgams, A., 569.
 ionised, spectrum of, A., 780.
 Barium salts, adsorption of, by clays, A., 298.
 effect of intracerebral injection of, A., 386.
 determination of arsenic in, B., 199.
 Barium carbide, production of, and its use in manufacture of acetylene, (P.), B., 62.
 carbonate, manufacture of, (P.), B., 439.
 magnesium perchlorate, preparation of, (P.), B., 1093.
 chloride, vapour pressure and latent heat of ammonia compounds of, A., 1128.
 ferrite, A., 444.
 fluoride, infra-red and red spectrum of, A., 1350.
 effect of electrolytes on suspensions of, A., 1123.
 sublimed in vacuum, structure of, and adsorption, A., 1226.
 Barium fluosilicate, determination of, on apples after spraying, B., 647.
 hydroxide, manufacture of, (P.), B., 1093.
 iodide hexahydrate, crystal structure of, A., 789.
 nitrate, crystallisation of, A., 414.
 equilibrium of, with silver nitrate, A., 1128.
 oxide, equilibrium of hydration of, A., 567.
 dihydrogen phosphate, decomposition of, in solution, A., 684.
 stannite, A., 320.
 sulphate, manufacture of, (P.), B., 201.
 purification of, (P.), B., 20, 757.
 stability of, at high temperatures, A., 1253.
 adsorption of actinium and lead on surface of, A., 421.
 adsorption of electrolytes on, A., 298.
 solubility of, in sulphuric acid, A., 901.
 sulphates, transformation of, (P.), B., 202*.
 sulphide, preparation of, A., 1253.
 phosphorescence of, A., 893.
 manufacture of solutions of, (P.), B., 538.
 polysulphides, A., 695.
 thioxystannite, A., 321.
 tungstate, crystal structure of, A., 414.
 Barium determination:—
 determination of, conductometrically, A., 699.
 microchemically, A., 588.
 volumetrically, A., 187.
 and its separation from strontium, A., 187.
 Bark, machine for separating, from supporting structures, (P.), B., 345.
 Barkhausen effect, A., 1220.
 thermal analogy of, A., 291.
 discontinuities in, A., 791.
 Barley, effect of freezing of arable soils on growth of, B., 857.
 utilisation of soil moisture by, B., 83.
 husks of, B., 217.
 removal of, by sulphuric acid, B., 943.
 tannin from, A., 777.
 effect of climate on nitrogen content of, B., 175.
 proteins of, in storage and germination, A., 1342.
 fractionation of, B., 362.
 sterols of, A., 1199.
 effect of acetylene on permeability of, A., 537.
 effect of boron on powdery mildew and spot blotch on, B., 269.
 seed treatment for covered smut of, B., 39.
 malting of, B., 902.
 action of ultra-violet rays on germination of, in malting, B., 86.
 protective action of extracts of, on amylase, A., 519.
 autumn and spring, value of nitrogenous and phosphatic fertilisers for, B., 775.
 Danish, content of proteins in, B., 362.
 diseased, due to choline, A., 778.
 germinating, enzymes of, A., 1089.
 malting, effect of phosphate manuring on yield and quality of, B., 691, 774.
 Swedish, B., 133.
 vitreous, proteins in, B., 822.
 determination of starch in, B., 561.
 Barophoresis. See Intertraction.
 Barytes, recent formations of, A., 459.
 crystal type of, A., 1390.
 See also Barium sulphate.
 Barytocalcite, crystal structure of, A., 672.
 Base, $C_6H_{11}ON$, and its chloraurate, from gliadin, A., 1430.
 $C_7H_{16}N_2$, and its salts and benzoyl derivative, from hydrogenation of acetylcaseinogen and acetylglobin, A., 1173.
 $C_9H_{17}N$, and its salts, from lupininic acid, A., 499.
 $C_9H_{11}ON_3$, and its derivatives, from acetylation of proteins, A., 245.
 $C_{10}H_{21}N$, and its salts, from chloroacetdiethylamide and magnesium ethyl bromide, A., 77.
 and its salts and derivatives, from lupinane cyanamide, A., 370.
 $C_{10}H_{14}O_2N_2$, and its chloraurate, from acetylation of proteins, A., 245.
 $C_{11}H_{22}N_2$, and its salts, from reduction of acetyl products of proteins, A., 245.
 $C_{11}H_{24}N_2$, and its salts, from lupinine, A., 370.
 $C_{11}H_{17}O_3N$, and its isomer, and their derivatives, from acetyl-
 isochavibetol acetoxybromide and methylamine, A., 953.

- Base, $C_{14}H_{22}N_2$, and its salts, from reduction of acetyl products of proteins, A., 245.
- $C_{15}H_{25}ON_2$, and its salts and derivatives, from lupaninecyanoamide, A., 371.
- $C_{16}H_{25}N$, and its salts, from California petroleum, A., 631.
- $C_{16}H_{34}O_2N_2$, from chloroacetyl diethylamide and magnesium ethyl bromide, A., 77.
- $C_{18}H_{14}N_2Cl_2$, from chloroacet-3-chloro-4-methylanilide and phosphorus pentachloride, A., 236.
- $C_{22}H_{22}O_2N_2$, from decomposition of *p*-N-dimethyletylsine, A., 1171.
- $C_{26}H_{30}N_4$, and its hydrochloride, from *p*-dianilinobenzene and triphenylmethyl chloride, A., 955.
- Bases**, electrodialysable bases in, B., 602.
- effect of hydrogen-ion concentration on precipitation of, by phosphotungstic acid, A., 375.
- in non-aqueous solution, relative strengths of, A., 307.
- aromatic, nuclear alkylation of, A., 950.
- cyclic, catalytic dehydrogenation of, A., 850.
- fused, reactivity of, A., 580, 1150.
- nitrogenous, in higher plants, A., 990.
- organic, separation and isolation of, by electrodialysis, A., 942.
- and acids in non-aqueous solution, A., 568.
- strength of, in glacial acetic acid solution, A., 308.
- action of, on dichloro-tertiary alcohols, A., 933.
- primary-quaternary, biuret reaction with, A., 1428.
- quaternary, phospho- and silico-tungstates of, and their use in analysis, A., 338.
- secondary, action of sulphur in presence of lead oxide on, A., 942.
- volatile, determination of, by fusion with potassium hydroxide, A., 1145.
- weak, electrolytic dissociation of, A., 307.
- determination of dissociation constants of, A., 308.
- strength of, in glacial acetic acid solutions, A., 40.
- determination of, micro-chemically, A., 1202.
- by titration in benzene, A., 584.
- adsorbed in soils, B., 506.
- ψ -Bases, A., 367, 742.
- strength of, in glacial acetic acid solutions, A., 40.
- Base-exchange apparatus for softening water, (P.), B., 1124.
- Base-exchange substances, production of, (P.), B., 62, 201.
- regeneration of, with sea-water, B., 655.
- Bast fibres, production of, for spinning, (P.), B., 241.
- Bastnasite, crystal structure of, A., 1116.
- Bat, fat in pregnant uterus of, A., 507.
- Bates from dung, B., 937.
- Bating materials, evaluation of, B., 1063.
- analysis of, B., 771.
- Batteries, manufacture of outer electrodes for, (P.), B., 257.
- depolarising mixtures for, (P.), B., 1145.
- alkaline storage, (P.), B., 30*.
- ammonium chloride electrolyte, prevention of formation of crust in, (P.), B., 1104.
- dry, anodes for, (P.), B., 168.
- reinforcing of electrolyte for, (P.), B., 766.
- miniature, (P.), B., 934, 1105.
- primary, (P.), B., 498.
- galvanic, grid structures for, (P.), B., 849.
- Leclanché-type, depolariser for, (P.), B., 122.
- primary, electrolyte for, (P.), B., 304.
- storage, (P.), B., 1105.
- active material for, (P.), B., 848.
- drying of plates for, (P.), B., 1078.
- treatment of lead plates for, (P.), B., 1145.
- positive plates for, (P.), B., 934.
- plate supporters for, (P.), B., 815.
- lead, theory of, B., 848.
- separators for, (P.), B., 1145.
- thermo-electric, (P.), B., 893.
- Batyl alcohol, structure of, A., 62.
- Bauxite, B., 438.
- production of alkali aluminates and alumina from, (P.), B., 588.
- production of titania from residues of, (P.), B., 539.
- activated, treatment of, (P.), B., 539.
- sulphidic, in Istria, A., 332.
- analysis of, B., 491.
- Bayer 205, effect of, on protein components, A., 764.
- Beans**, tolerance of, to insect sprays and dusts, B., 509.
- effect of petroleum oils on leaves of, A., 774.
- Beans**, cacao. See Cacao beans.
- French, tissue fluids of, A., 1102.
- mung. See *Phaseolus aureus*.
- soya. See Soya beans.
- sprouting, mineral elements in, A., 774.
- Bearings, antifriction, (P.), B., 1031.
- Bearing materials, (P.), B., 912.
- Bearing metals. See under Alloys.
- Beckmann rearrangement, A., 222, 223, 843.
- Becquerel effect, A., 1130, 1212.
- of the second order, A., 915.
- "electro-capillary," A., 313.
- Beech wood, swelling of, B., 799.
- light creosote from, B., 660.
- red, composition of, A., 606.
- composition and delignification of, A., 1101.
- Beef in diet, A., 515.
- chilling of, (P.), B., 653, 741.
- chilled, chemical changes in fat of, B., 779.
- Beer, brewing of, (P.), B., 903.
- preparation of hops for, (P.), B., 1024.
- removal of head in fermentation of, B., 362.
- fermentation and maturation of, B., 86.
- sterilisation of, (P.), B., 991.
- apparatus for pasteurisation of, (P.), B., 1153.
- adsorption in filters for, B., 1117.
- determination of colour of, B., 903.
- measurement of surface tension of, B., 362.
- bottling of, B., 270.
- role of carbon dioxide in saturation of, B., 650.
- antiseptic content of, B., 562.
- nitrogenous substances in, B., 459.
- precipitation of protein in, by hop tannin, B., 1024.
- "tannin-nitrogen" and "tannin number" as guide to proteins in, B., 85.
- contamination of, by metals, B., 822.
- weak in alcohol, preparation of, (P.), B., 991.
- bottled, haze in, B., 271.
- examination of old samples of, B., 1117.
- German, composition of, B., 1117.
- Italian, composition of, B., 1069.
- Portuguese, free acidity of, B., 991.
- containing vitamins, manufacture of, (P.), B., 1118.
- determination of carbon dioxide in, B., 40.
- Beet sugar. See under Sugar.
- Beetle, flour. See *Tribolium confusum*.
- Japanese. See *Popillia japonica*.
- Beetroots, selective cultivation of, A., 535.
- increase in polarisation of pulp of, during preparation, B., 1150.
- density of wet and dry pulp of, B., 85.
- composition of pure juice of, B., 1150.
- slices, lixivation of, (P.), B., 867.
- acidification of, with *Thermobacterium mobile*, B., 776.
- for fodder, B., 605.
- dried, effect of storage on, B., 735.
- alkalisation of diffusion in working of, B., 776.
- dry, analysis of, B., 270.
- sugar, composition of, in various crop rotations, B., 507.
- cultivation of, B., 313.
- influence of various factors on, B., 268.
- manuring of, in Kiev, B., 1112.
- fertilisation of soils for, B., 507.
- effect of mineral fertilisers and manure on quality of, B., 1022.
- effect of nitrogen fertilisers on yield and quality of, B., 1022.
- effect of phosphoric acid in maturing of, B., 557.
- application of sodium nitrate to, B., 604.
- utilisation of nutrients by, B., 604.
- aqueous digestion and diffusion of, B., 411.
- dry rot in, in relation to soil conditions, B., 990.
- melassigenic nitrogen in, after various treatments, B., 1113.
- and molasses, nitrogen and raffinose in, A., 1102.
- pectin and "plus sugar" in, B., 458.
- potassium in, A., 1102.
- feeding value of tops of, B., 1072.
- raw, storage of, B., 510.
- relation between ash content and conductivity of solutions of, B., 510.
- storage and analysis of, B., 410.
- sampling analysis and composition of, B., 692.
- determination of purity quotient of juice of, B., 84.

- Beetroots, sugar, determination of sugar in, B., 458, 606.
determination of sugar in exhausted slices of, B., 692, 1152.
- Beetroot leaves, relation between weight of, and their nitrate-nitrogen, A., 534.
ensilage of, B., 604.
- Behenic acid, parachor of, A., 149.
derivatives of, A., 1396.
- Behenic acid, ϕ -amino-, and its benzenesulphonyl derivative, A., 76.
- Behenic acid, synthesis of, A., 1271.
- Behenyl alcohol, A., 1396.
- Benniseed, nutritive value of, A., 385.
- Benoite, crystal structure of, A., 289.
- Bentonite, thixotropy of suspensions of, A., 1232.
- Benz- β -acetyl-4-bromo-2-nitrophenylhydrazide, *m*-nitro-, A., 1416.
- Benz- β -acetyl-3-bromo-*o*-tolylhydrazide, *p*-nitro-, A., 1416.
- Benz- β -acetyl-3:5-di-bromo-*o*-tolylhydrazide, *m*-nitro-, A., 1416.
- Benzacridine derivatives, formation of coloured adsorption compounds of, with iodine, A., 98.
- Benzaldehyde, preparation of, from benzyl chloride, A., 353.
physical constants of, A., 957.
velocity of conversion of, into its acetal, A., 798.
photochemical oxidation of, A., 1019.
inhibition of oxidation of, A., 438.
autoxidation of, A., 1248, 1375.
action of anthracene in, A., 1245.
action of aniline and its derivatives on, A., 98.
condensation of, with anisaldehyde and *p*-dimethylamino-benzaldehyde phenylhydrazones, A., 1416.
with salicylaldehyde phenylhydrazones, A., 957.
formation of oxonium salt in sulphuric acid solutions of, A., 485, 486.
compound of, with anthrahydroquinone, A., 355.
4-benzyl-2-methyl-, 2:4-dibenzyl-, and 4-*p*-tolyl-2-benzyl-semicarbazones, A., 613.
n-butylacetal, A., 463.
copper benzoate, A., 1415.
nitrobenzenesulphonhydrazones, A., 610.
and bromo-, chloro-, and nitro-, 1-phenyl- and 1-*o*-tolyl-carbohydrazones, A., 475.
and *p*-chloro-phenyl-*p*-chlorobenzylhydrazones of, A., 938.
phenylhydrazones, condensation of, with aldehydes, A., 222.
4-phenyl-*s*-ethylthiosemicarbazone, and its salts, A., 238.
4-phenyl-*s*-methylthiosemicarbazone, and its salts, A., 238.
piperidinoformyl-carbohydrazones and -hydrazones, A., 850.
and *di*- and *tri*-nitro-, 2:4:6-trichlorophenylhydrazones, A., 1046.
4-tolyl-*s*-ethylthiosemicarbazones, salts of, A., 239.
4-tolyl-*s*-methylthiosemicarbazones, and their salts, A., 238.
- Benzaldehyde, *p*-bromo-, diethylacetal, A., 949.
 ω -bromo- and ω -bromonitro-, 4-bromo-2-nitro- and 2-nitro-phenylhydrazones, and ω -bromonitro-, *mono*- and *di*-bromo-*o*-tolylhydrazones, A., 1416.
 ω -bromo-2:4-dinitro-, ω -chloro-2:4-dinitro-, and 2:4-dinitro-, halogeno-phenyl- and -tolyl-hydrazones, A., 1416.
bromo- and chloro- nitro-3-hydroxy-, *p*-nitrophenylhydrazones, formation of colours by action of alcoholic alkali hydroxides and concentrated sulphuric acid on, A., 1416.
m-chloro-, condensation of, with β -naphthol, A., 493.
m-hydroxy- and *p*-nitro-, 2:4-dinitrophenylhydrazones, A., 937.
 o -nitro-, condensation of, with hydantoin, A., 366.
m-nitro-, 2-*p*-cymylhydrazones, A., 475.
p-nitro-, condensation of, with benzaldehydephenylhydrazones, A., 222.
2:4:6-trinitro-, and its derivatives with aniline, A., 730.
- Benzaldehydes, substituted, nitration of, A., 89.
condensation of, with methyl *n*-butyl and *n*-propyl ketones, A., 485.
p-amino-, acetyl derivative, and *p*-halogeno-, *p*-nitrophenylhydrazones of, A., 834.
mono- and *di*-bromonitro-, and bromodinitro-, and their derivatives, A., 958.
hydroxy-, condensation of, with 7-methylcoumarin-4-acetic acid, A., 1069.
3-hydroxy-, bromination and nitration of, A., 958.
nitro-, pyridine synthesis from, A., 1072.
chlorophenylhydrazones of, A., 1156.
- Benzaldehyde- β -arsinic acid, and its derivatives and chemotherapeutic examination, A., 1315.
- Benzaldehyde- β -bromoindogenide, *p*-nitro-, A., 468.
- Benzaldehyde-*tri*- and -*tetra*-chlorophenylhydrazidines, nitro-, A., 1156.
- α -Benzaldoxime, *O*-*o*-tolylcarbonyl derivative, A., 211.
- Benzamide, preparation of, A., 220.
- Benzamide, 3-nitro-4-hydroxy-, manufacture of derivatives of, (P.), B., 434.
- Benzamidoxime, nickel salt, A., 350.
- Benzanilide, 2:5-dichloro-, A., 1283.
- Benzanilide-amidodichloride hydrochloride, A., 844.
- 5:6-Benzanthraquinone, 2-amino- and 2-chloro-, A., 226.
- 6:7-Benzanthraquinone, *mono*- and *di*-amino-, 1-amino-4-hydroxy-, *mono*- and *di*-chloro-, chloro-*mono*- and -*di*-hydroxy- and *di*- and *tri*-hydroxy-, and their derivatives, A., 1064.
- Benzanthraquinones, trichloro-, chloro-*mono*- and -*di*-hydroxy-, *di*hydroxy-, and its derivatives, and trihydroxy-, A., 1063.
- 1:2-Benzanthraquinone dyes, vat, manufacture of, (P.), B., 338.
- lin*-Benzanthraquinone series, A., 1064.
- 1:2-Benzanthraquinone-4-carboxylic acid, A., 1420.
- 2:3-Benzanthraquinone-2:2-disulphonic acid, A., 1064.
- 1:2-Benz-4-anthraic acid, A., 1420.
- Benzanthrone, manufacture of, (P.), B., 1133.
derivatives, A., 1419.
- Benzanthrone, amino-, and its acetyl derivative, and *mono*-, *tri*-, and *tetra*-nitro-, A., 844.
- 2:3-Benz-9-anthrone, and 10-hydroxy-, A., 1064.
- Benzanthrone dyes for wool, (P.), B., 712.
vat, manufacture of, (P.), B., 239, 435, 797, 798, 834, 835.
brominated, (P.), B., 476.
fast, manufacture, (P.), B., 919.
- Benzanthronepyrazoleanthrone dyes, vat, and their intermediates, (P.), B., 624, 669.
- Benzbisthionaphthenequinone dyes, vat, manufacture of, (P.), B., 14.
- Benz-2:5-di-bromoanilide, A., 1151.
- Benz-2:4:6-*tri*bromoanilides, *mono*- and *di*-nitro-, A., 1151.
- Benz-4:6-di-bromo-2-methylamylide, A., 1151.
- Benzbromonitroanilides, and nitro-, A., 1151.
- 6:7-Benz-2:3-diketo-2:3-dihydrothionaphthen, action of hydrogen peroxide on, A., 620.
- 1:3-Benzdioxin, 6-amino-, acetyl derivative, and 6:8-dinitro-, A., 1305.
- Benzeins, colour changes of, A., 956.
- Benzene, electronic model for, A., 609.
structure and quantum mechanics of, A., 1000.
and its derivatives, molecular structure of, A., 672.
interatomic distances in, A., 790.
nucleus, indirect substitution in, A., 723, 954.
influence of substitution on the oxidation of side-chains in, A., 1283.
formation of, from heating of methane, B., 230.
manufacture of, from butane, propane, ethane, or their mixtures, (P.), B., 667.
recovery of, from aqueous solutions, (P.), B., 331.
refractive index of, A., 1214.
spectra of, A., 1351.
band spectrum of, A., 1351.
fluorescence spectrum of, A., 1351.
Raman effect for, A., 20, 146.
distribution of intensity in Raman lines due to, A., 1353.
scattering of light by, A., 20.
Rayleigh scattering by, A., 787.
quantum theory of, A., 1356.
dielectric constant of, A., 894.
osmotic pressure of dilute solutions of, A., 905.
thermal properties of, A., 912.
and nitro-, melting points of, A., 1361.
vapours, silicate adsorbent for, (P.), B., 804.
azeotropy of mixtures of ethyl alcohol and, A., 1004.
physical properties of mixtures of phenol, water, and, A., 555.
solubility of hydrogen fluoride in, A., 297.
water content of, A., 901.
crystal structure of, A., 152.
titration of acids and bases in, A., 584.
pyrogenetic decomposition of, at high pressure, A., 832.
induction of reaction between chlorine and, by ethylene, A., 610.
hydrogenation of, over nickel, A., 693.
catalytic hydrogenation of, with nickel and platinum, A., 1135.
nitration of, A., 1280.
by ethyl nitrate, in presence of catalysts, A., 610.
and its derivatives, condensation of, with olefinic acids, A., 1290.

- Benzene**, oxidation and combination of phenol and, in the organism, A., 1183.
 condensation of, with chloral, A., 1050.
 formation of methane from, A., 1043.
 tolerance of animals to, A., 650.
 toxicology of, A., 1087.
 and its derivatives, effect of substituents on picrates of, A., 609.
 derivatives, determination of constitution of, A., 349.
 emission spectra of, A., 283.
 ultra-violet absorption spectra of, A., 996.
 dielectric polarisation of, A., 1354.
 dipole measurements with, A., 1213.
 substitution of, A., 1295.
 effect of substituents on nitration of, A., 610.
 toxicity of, A., 764.
 condensations of, with dimethylolcarbamide, A., 614.
 dinuclear, effect of nitrates on, A., 946.
 disubstituted, adsorption of, A., 558.
 o-disubstituted, and their ring-closure, A., 854.
 and nitro-, colour tests for, B., 433.
 detection of, colorimetrically, A., 375.
 determination of, in alcoholic solutions, A., 638.
 vapour, determination of, in air, B., 871.
 apparatus for determination of sulphur in, B., 792.
 See also Benzene and Benzol.
- Benzene**, symmetrically hexasubstituted, electric moment of, A., 1213.
hexaamino-, crystal symmetry of, A., 897.
 bromo- and chloro-, dipole moments of, A., 23.
 action of carbon dioxide on product of magnesium and, A., 220.
s-tri-bromo- and *tri-chloro*-, electric moments of, A., 410.
p-bromofluoro-, reactions with, and *dibromofluoro*-, A., 945.
o-bromo-p-nitronitroso-, A., 1046.
 chloro-derivatives, substituted, effect of replacement of chlorine in, A., 1283.
 chloro-, nitration of, B., 796.
o-dichloro-, as fat solvent, B., 399.
m-dichloro-, nitration of, A., 610.
p-dichloro-, electric moment of, A., 410.
 control of lesser peach borer with, B., 990.
hexachloro-, X-ray structure of, A., 1357.
polychloro-derivatives, use of, in synthesis of dyes, A., 950, 952.
 3:4-dichloro-fluoro-, iodo-, and -nitroso-, and 1-chloro-4-iodo-2-nitro-, A., 79.
di- and *tri-chloro-trifluoro*-, and *tetrachlorodifluoro*-, A., 832.
 chloronitro-derivatives, action of, on benzyl alcohol, A., 1049.
p-chloronitro-, preparation of *p-nitrophenol* from, A., 212.
 1-chloro-*mono*- and *di-nitro-5-p-amino*-, toluenesulphonyl derivatives, A., 1288.
 chlorodinitro-, parachors of, A., 287.
 condensation of, with aminothiosalicylic acid, A., 835.
 2:5-dichloronitroso-, A., 1283.
 halogeno-derivatives, action of sodium methoxide on derivatives of, A., 79.
hexahalogeno-derivatives, action of, on magnesium organic compounds, A., 207.
 1:2:3:4-tetrahydroxy-, derivatives of, A., 1411.
 iodo-, fate of, in rats and rabbits, A., 1182.
 iodoso-, dibenzoate, A., 1290.
 nitro-, purification of, (P.), B., 965.
 conductivity of electrolytes in, A., 311.
 electrical and electro-optical constants and purity of, A., 293.
 effect of temperature on dielectric constant of, A., 148.
 dielectric polarisation of, A., 1354.
 Kerr effect for, A., 1220, 1355.
 change of density of, with temperature, A., 899.
 vapour pressure of, A., 1004.
 dissociation of salts in, A., 686.
 liquid, modifications of, A., 792.
 1:3:5-trinitro-, manufacture of, B., 530.
 nitroaminotetrahydroxy-, derivatives of, A., 478.
 nitroso-, molecular weight of, in solid solution, A., 296.
 action of magnesium and magnesium iodide on, A., 721.
 α - and β -Benzene hexachlorides, dipole moments of, A., 900.
 Benzenearsinic acid, 3-amino-4-hydroxy-, 3-acetyl derivative, manufacture of β -hydroxyethylamine salts of, (P.), B., 905.
 2-Benzeneazoacenaphthene, 3-amino-, metallic derivatives of, A., 835.
N-Benzeneazo-N-benzyloxybenzylamine, *p-nitro*-, A., 1286.
 Benzenazo-*o*-coumaric acid, and nitro-, A., 1285.
 Benzenazo-*p*-cresol, derivatives of, A., 951.
 Benzenazoacresols, molecular compounds of, with acid halides, A., 613.
 Benzenazodihydrosinomenine, A., 105.
 5-Benzeneazo-4:6-diketo-1-phenyl-1:4:5:6-tetrahydropyridazine-3-carboxylic acid, and its ethyl ester, synthesis of, A., 1309.
 Benzenazo- β :5-dimethyl-*o*-coumaric acid, A., 1285.
 3-Benzeneazo-2:4-dimethylpyrrole, *p-nitro*-, A., 1427.
N-Benzeneazo-N-ethoxyethylamine, *p-nitro*-, A., 1286.
 Benzenazoethylacetoacetic acid, *m-nitro*-, ethyl ester, A., 211.
 Benzenazohomophthalimides, *o*-chloro- and nitro-, A., 721.
 6-Benzeneazo-5-hydroxyhydrindene, *p-chloro*-, A., 83.
 Benzenazo-7:8-*d*-hydroxy-4-methylcoumarin, *p-nitro*-, A., 1409.
 8-Benzeneazo-6-iodocoumarin, 8-*p-nitro*-, A., 1409.
N-Benzeneazo-N-methoxymethylamine, *p-nitro*-, A., 1286.
N-Benzeneazo-N-methoxyisopropylamine, *p-nitro*-, A., 1286.
 Benzenazomethylacetoacetic acid, *m-nitro*-, ethyl ester, A., 211.
 2-Benzeneazomorphine, transposition of, into 2-benzeneazocpormorphine, and their *p-chloro*-derivatives, A., 1434.
 Benzenazo- α -naphthol, *p-nitro*-, compound of, with sodium hydrogen sulphite, and its derivatives, A., 344.
 Benzenazo- β -naphthol, additive compound of β -naphthol and, A., 212.
 Benzenazo- β -naphthol, 4-amino-, B., 484.
 p-nitro-, action of, on sodium hydrogen sulphite, A., 951.
 Benzenazonaphthols, molecular compounds of, with acid halides, A., 613.
 O-carboethoxyl derivatives, A., 951.
 Benzenazo- β -naphthol-3:6-disulphonic acids, 1-halogeno-, sodium salts, influence of halogen on colour of, A., 475.
 Benzene-4-azo- β -naphthylamine, 3-chloro-1-hydroxy-, A., 952.
 Benzenazo- α -naphthylaminesulphonic acids, A., 1408.
p-Benzeneazophenol, and 4-nitro-, molecular compounds of, with acid halides, A., 613.
 Benzenazophenols, substituted, group influence on colours of, A., 82.
 Benzene-6-azo-*p*-phenylarsinic acid, 1:3-*di*hydroxy-, A., 105.
 Benzenazoresorcinol, *p-nitro*-, compounds of, with benzoyl bromide and propionyl chloride, A., 613.
 4-Benzeneazosalicyloylnaphthylamides, *p-nitro*-, A., 1285.
 Benzenazosinomenine, A., 105.
 Benzenazothebainone, A., 105.
 Benzenebisazimido-*C*-phenyl-*o*-carboxylic acid, A., 744.
 Benzene-4:6-bisazo-*p*-phenylarsinic acid, 1:3-*di*hydroxy-, A., 105.
 Benzenediazoaminoacenaphthenes, *p-nitro*-, A., 82.
 Benzenediazonium sulphate, reaction of, with aliphatic alcohols, A., 211.
 Benzene-4-diazo-1-oxide, 6-bromo-2-nitro, A., 1284.
 Benzene-1:3-dicarboxylic acid, 4-6-*di*hydroxy-, A., 1298.
 Benzenedisulphonyl fluorides, *mono*-, *di*-, and *tri-chloro*-, A., 1405.
 Benzene-6- α -naphthaleneazo-4-azo-*p*-phenylarsinic acid, 1:3-*di*hydroxy-, A., 106.
 Benzene-6- α -phenylquinoline- β -azo-4-azo-*p*-phenylarsinic acid, 1-amino-3-hydroxy-, A., 106.
 Benzene-1- β -propionic-4-undecic acid, ethyl ester, A., 1290.
 Benzenestibinic acids, amino-, manufacture of acyl derivatives of, (P.), B., 946.
 Benzenesulphonamidodisulphonic acid, potassium salts, A., 1053.
 Benzenesulphon-*n*-amylamide-, *p-bromo*-, A., 340.
 Benzenesulphon-*n*-heptylamide, and *p-bromo*-, A., 340.
 Benzenesulphon-*n*-hexylamide, and *p-bromo*-, A., 340.
 Benzenesulphonhydrazides, *mono*- and *di-nitro*-, A., 610.
 Benzenesulphonic acid, potassium salt, absorption of hydrogen sulphide by, A., 207.
 Benzenesulphonic acid, *p*-iodoso-, A., 207.
 Benzenesulphonic acids, nitro-, ethyl esters, A., 339.
 l-menthyl esters, A., 961.
 Benzenesulphonmethyl- γ -hydroxypropylamide, A., 86.
dl-Benzenesulphonylalanine, *m-nitro*-, A., 481.
 Benzenesulphonylbenzylidimethylammonium chloraurate, A., 1045.
 Benzenesulphonyl-3:5-dichlorobenzenesulphonylmethanesulphonylmethane, A., 1394.
 Benzenesulphonyldimethylethylammonium salts, A., 1045.
 Benzenesulphonylmethanesulphonyl-3:5-dichlorophenylthiomethane, A., 1394.
 α -Benzenesulphonyl- α -methanesulphonylethane, A., 1394.
 Benzenesulphonylmethanesulphonylethanesulphonylmethane, and its salts and bromo-derivative, A., 1394.

- Benzenesulphonylmethanesulphonylmethane, A., 1394.
 Benzenesulphonylmethanesulphonylmethylthiolmethane, A., 1394.
 Benzenesulphonylmethanesulphonyl-*p*-tolylthiolmethane, A., 1394.
 κ -Benzenesulphonylmethylaminoundecic acid, behaviour of, in the body, A., 115.
 1-Benzenesulphonyl-*dl*- β -2:3:5:6-tetramethylpiperazine, and its derivatives, A., 851.
 Benzenesulphonyl-*p*-toluenesulphonyl-3:5-dichlorophenylthiolmethane, A., 1394.
 Benzenesulphonyl-*p*-toluenesulphonylmethane, A., 1394.
 Benzenesulphonyl-*p*-toluenesulphonylmethanesulphonylmethane, A., 1394.
 Benzenesulphonyl-*p*-toluenesulphonylmethylthiolmethane, A., 1394.
 Benzenesulphonyl-*p*-toluenesulphonyl-*dl*- β -2:3:5:6-tetramethylpiperazines, A., 851.
 α -Benzenesulphonyl- α -*p*-tolylthiolacetone, A., 1394.
 Benzenesulphonyl-*p*-tolylthiolmethane, A., 1394.
 Benzenesulphonyltrimethylammonium salts, A., 1151.
 Benzenedithioglycollic acids, and *mono*- and *di*-chloro-, condensation of, with chlorosulphonic acid, A., 234.
 Benzene-2:4:6-triazo-*p*-phenylarsinic acid, 1:3-dihydroxy-, A., 106.
 Benzenetrisulphonyl fluoride, and chloro-, A., 1405.
 2-(β -Benzethylamidoethyl)quinoline, A., 965.
 5:6-Benzflavanol, A., 737.
 4:5-Benzcycloheptanone, and its phenylhydrazone, A., 843.
 Benzhydrazide, *o*-amino-, derivatives of, A., 1074.
 Benzhydrol, 2:5-dichloro-, A., 1283.
 Benzhydrol-2:3:2'-tricarboxylic acid 2'-lactone, and its derivatives, A., 1292.
 Benzhydryldiphenylacetic acid, derivatives of, A., 955.
 Benzhydrylidenefluorene, double linking in, A., 833.
 Benzidine, reduction of, catalytically, A., 613.
 Benzidine, 2:5-dichloro-, A., 1283.
 Benzidinesulphone, preparation of, and its derivatives, A., 950.
 Benzil phenylacetylhydrazones, A., 475.
 4-*p*-tolylthiosemicarbazone, A., 486.
 Benzil, *p*-hydroxy-*p'*-nitro-, and its derivatives, A., 1294.
 Benzils, reduction of, by magnesium triphenylmethyl bromide, A., 1058.
 Benzilaniil, reduction of, by magnesium and magnesium iodide, A., 1045.
 Benzilidioximes, velocity of hydrolysis of acetyl and benzoyl derivatives of, A., 1157.
 Benzildi-*p*-tolil, *p*-hydroxy-*p'*-nitro-, A., 1294.
 Benzilic acid, condensation of, with thiophen and thionaphthen, A., 361.
 Benziloxime, condensation product of, with thiohydantoin, A., 495.
 Benzinidiodiacetic acid, A., 232.
 Benziniazole, salts of, A., 106.
 Benziniazoles, methylation of, A., 851.
 Benziniazole-5-arsinic acid, 2-thiol-, and its derivatives, A., 106.
 Benziniazole-2-sulphonic acid, A., 106.
 Benziniazolonearsinic acids, *N*-substituted, manufacture of (P.), B., 179.
 Benziniazolonestibinic acids, manufacture of (P.), B., 612, 782.
 Benzine, production of, by hydrogenation of brown coal, B., 282.
 by carbonisation of solid fuel (P.), B., 9.
 synthesis of, from carbon monoxide and hydrogen, B., 231.
 effect of carriers on, B., 231.
 disintegration of catalyst in, B., 230.
 nickel catalysts for, B., 748.
 extinction of explosions of, with air, by carbon tetrachloride, B., 188.
 synthetic, occurrence of hydroaromatic constituents in, B., 231.
 Ural, constituents of, and its catalytic aromatisation, B., 661.
 apparatus for determination of sulphur in, B., 792.
 4:5-Benz-10:11-(1':2'-naphtha)chrysene, A., 612.
 Benz- α - β -naphthathioxin, and 10-bromo- and 9:10-dinitro-, A., 739.
 Benzenobenzthiophanthrequinones, A., 1163.
 1:2-Benzocarbazole, and its derivatives, A., 631.
 Benzo-trichloride, dipole moment of, A., 669.
 6:7-Benzocoumarin, A., 494.
 6:7-Benzocoumarin-3-carboxylic acid, and its ethyl ester, A., 494.
 3:4-Benzo-1:2-dihydrocarbazole, A., 631.
 Benzofluorenones, isomeric, formation of, from 2-phenyl-naphthalene-5:2'-dialdehyde, A., 741.
 Benzoic acid, manufacture of, from phthalic anhydride (P.), B., 434.
 extraction of, from aqueous solution with light petroleum, A., 1270.
 Benzoic acid, heat of solution of, in toluene, A., 912.
 adsorption of, by charcoal, A., 903.
 from mixed solvents, A., 1226.
 dissociation constant and activity coefficient of, A., 1010.
 thermal dissociation of vapour of, A., 1248.
 velocity of solution of, A., 437.
 activity coefficients of ions of, in potassium chloride solutions, A., 811.
 solubility and activity coefficient of, in aqueous benzoate solutions, A., 431.
 solubility of, in solutions of salts, A., 566.
 decarboxylation of, in presence of metallic oxide catalysts, A., 1053.
 influence of neutral salts on esterification of, with alcoholic hydrogen chloride, A., 45.
 nitration of, in magnetic and electrostatic fields, A., 619.
 action of ozone on, A., 350.
 conjugation of, in man, A., 980.
 effect of substitution on flocculation of serum-albumin by derivatives of, A., 396.
 detection of, A., 856; B., 1069.
 in foods, B., 272, 609.
 Benzoic acid, salts, oxidation of, by permanganate, A., 803.
 determination of, mercurimetrically, A., 1079.
 calcium salt, production of (P.), B., 804.
 silver salt, solubility and activity of, in concentrated salt solutions, A., 566.
 Benzoic acid, and *p*-hydroxy-, esters, detection of, microchemically, in foods and drugs, B., 316.
 benzoin ester, A., 1060.
 $\beta\beta'$ -dichloroisopropyl ester, A., 1054.
 and *p*-amino- and *p*-nitro-, *N*- β -hydroxyethyl- and *N*- γ -hydroxypropyl-morpholine esters, hydrochlorides of, A., 1075.
 β -naphthyl ester. See Benzonaphthol.
 and *m*-chloro-, *o*-phenylacetamidophenyl ester, A., 615.
 and *p*-amino- and *p*-nitro-, *N*-phenylalkyl-*N*-methylamino-alkyl esters, A., 725.
 triethyl ester, condensation of, with acetoacetic and malonic esters, A., 822.
 Benzoic acid, amino-, acetyl derivative, aminochloro- and nitro-amino-derivatives of, A., 393.
p-amino-, fluosilicate of, A., 612.
 ethyl ester. See Anesthcsin.
 acetyl and benzoyl derivatives, ethyl esters, A., 220.
mono- and *di*-amino- and 5-nitro-2-amino-, acetyl, isobutyryl and propionyl derivatives, and their benzyl esters, A., 855.
p-bromo-, calcium and strontium salts, solubilities of, in acetone-water mixtures, A., 1365.
 tetrabromo-2-amino-, acetyl derivative, A., 725.
p-chloro-, fate of, in the organism, A., 1327.
 3-chloro-4-hydroxy- and *p*-hydroxy-, glyceryl esters, A., 1054.
o-fluoro-, derivatives of, A., 947.
p-hydroxy-, condensation of, with dichloroacetaldehyde, A., 1162.
 alkyl esters, for sterilisation, etc., B., 612.
 methyl ester, modifications of, A., 351.
 and its esters, detection and determination of, in foods, B., 43.
 2:4-dihydroxy-. See β -Resoreylic acid.
 2-iodo-5-nitro-, A., 87.
p-nitro-, γ -chloropropyl ester, A., 725.
 dinitro-, esters of, A., 1068.
 3:5-dinitro-, identification of phenols as esters of, A., 837.
 methoxyphenyl ester, A., 469.
 trinitro-, decomposition of, in various solvents, A., 690.
 2:4:6-trinitro-, esters of, A., 481.
 thio-, 4-chloro-acetamido- and -benzamido-phenyl esters, A., 348.
o-thiol-, *l*-menthyl ester, A., 961.
 Benzoic acids, substituted, molecular volumes of, A., 24.
 amino-*mono*- and *di*-hydroxy-, acetyl derivatives, bromination of, and their bromo- and nitro-derivatives, A., 725.
 diamino-, ethyl esters, A., 650.
 3:5-diamino-, and iodo-, esterification of, with alcoholic hydrogen chloride, A., 87.
 hydroxy-, action of phenylcarbimide on, A., 1414.
 halogenated, cryptotoxic properties of, A., 657.
o-Benzoic sulphinide ("saccharin"), imidoauric acid from, A., 1172.
 tetraiodo-, A., 221.

- Benzoin, reduction of, to hydrobenzoin, A., 958.
 4-*p*-tolylthiosemicarbazone, A., 486.
d-Benzoin, velocity of racemisation of, in alkaline solutions, A., 844.
 Benzoin, catalytic reduction of, A., 1294.
 formation of additive compounds of, A., 1059.
 mixed, formation of, A., 354, 732, 844, 959, 1059, 1294.
 determination of structure of, by Beckmann transformation, A., 844.
 Benzol, recovery of, from coal gas, B., 1128.
 from distillation gases, (P.), B., 145.
 crude, composition and recovery of, B., 375.
 purification of, (P.), B., 10.
 refining of, B., 748.
 removal of hydrogen sulphide and cyanide from, B., 575.
 utilisation of acid sludge from washing of, B., 957.
 and its homologues, removal of, from fuel gases, (P.), B., 234.
 obtained by pyrolysis, treatment of, (P.), B., 473.
 corrosion of copper by, B., 1000.
 resin formation in, B., 7.
 motor, refining of, B., 188, 429.
 sulphuric acid test for, B., 101.
 determination of, in ammoniacal and waste liquors, B., 283.
 determination of phenols in water from manufacture of, from coke, B., 706.
 See also Benzene.
 Benzonaphthol, manufacture of, B., 365.
 Benzonitrile, latent heat of vaporisation of, A., 155.
 reaction of, with sodium, A., 1058.
 Benzonitrile, 2:4-*tri*-bromo-, crystal structure of, A., 672.
 3:4-*dichloro*-, A., 79.
m-hydroxy-, preparation of, A., 1414.
p-thiocyano-, A., 349.
 Benzophenone, preparation of, by Friedel-Crafts reaction, A., 91.
 diazide, A., 1058.
 decomposition of, under X-rays, A., 1251.
 2:4:6-*trichlorophenylhydrazone*, A., 1046.
p-nitrobenzeneazophenylhydrazone, A., 476.
 4-*p*-tolylthiosemicarbazone, A., 486.
 Benzophenone, 3-bromo-5-iodo-4-amino- and 3:5-*di*-bromo-4-amino-, freezing point of mixtures of, A., 1127.
m-chloro-, and *o*-fluoro-, and its oxime, A., 947.
 2:5-*dichloro*-, and its oxime, A., 1283.
o-hydroxy-, oximes of, and their hydrochlorides, A., 732.
 2:4:6-*tri*-hydroxy-, benzylation of, and its derivatives, A., 963.
 thio-, preparation of, A., 844.
 Benzophenones, hydroxy-, and their derivatives, A., 83.
p-nitro-, oximes of, and their *N*-methyl ethers, A., 1156.
 Benzophenoneanil, reduction of, by magnesium and magnesium iodide, A., 1045.
 Benzophenone-5-carboxylic acid, 2:4-*dichloro*-, A., 624.
 Benzophenone-2:3:2'-*tricarboxylic acid* dilactone, and its methyl ester, A., 1292.
 Benzopolymethylene compounds, A., 1055.
 Benzopurpurin-4B, and its isomeride, A., 908.
 1:4-Benzopyrones, preparation of, A., 962.
 Benzopyrylium salts, formation of, from substituted coumarins, A., 1070.
p-Benzoquinone, influence of, on cells, A., 1087.
 detection of, colorimetrically, A., 375.
 Benzoquinone, *di*amino-, and *mono*-, *di*-, and *tri*-bromo-*mono*- and *di*-amino-, acetyl derivatives, and their derivatives, and *tetra*-bromo-, A., 477.
 3-chloro-, 4-oxime, acidic character of, and its derivatives, A., 952, 1152.
tetrachloro-, formation of, from aromatic compounds, A., 623.
 2:5-*dichloro*-6-bromo-, A., 836.
 Benzoquinone, 2-nitro-5-amino-*mono*- and *di*-hydroxy-, acetyl derivatives, A., 488.
 Benzoquinones, 3:6-*di*halogeno-, manufacture of dyes and pigments from, (P.), B., 337.
p-Benzoquinones, substituted, reduction of, by sulphur dioxide in aqueous and alkali solution, A., 93.
 Benzoquinone dyes, manufacture of, (P.), B., 337.
 Benzothonaphthen-2:3-*dicarboxylic acids*, and their anhydrides, A., 1163.
 Benzothonaphthenquinones, and their derivatives, A., 1163.
 1:2-Benzoxanthone-8-acrylic acid, and its salts, A., 617.
 1:2-Benzoxanthone-8-carboxylic acid, and its sodium salt, and 5:6:7-*trichloro*-, A., 617.
 1:2-Benzoxanthrone, 5:8-*di*hydroxy-, A., 1063.
 6:7-Benzoxanthrone, 1:4-*di*hydroxy-, A., 1064.
 Benzoyl chloride, Raman spectrum of, A., 1353.
 action of hydrogen sulphide on, A., 86.
 3:4-*dinitro*-, A., 1151.
 halides, molecular compounds of, with hydroxyazo-compounds, A., 613.
 peroxide, decomposition of, by ultra-violet light, A., 220.
 detonation of, spontaneously, A., 619.
 detection of, in flour, B., 779.
 Benzoylacetate, ethyl ester, A., 1069.
 Benzoylacetone, and its sodium derivative, reaction of, with methyl chloroformate and semicarbazide in ether, A., 1035.
 rubidium compound, A., 443.
 4-*p*-tolylthiosemicarbazone, A., 486.
 3-Benzoyl-5-acetyl-*p*-cresol, A., 845.
 Benzoylalanine, amino- and *m*-nitro-, and their salts and derivatives, A., 481.
N-Benzoylalanylglucosamine, A., 470.
 ϵ -Benzoyl- α -*dl*-alaninyl-*dl*-lysine, A., 767.
 Benzoyl-*p*-aminobenzoic acid, *p*-amino-, A., 124.
 Benzoylanabasine, A., 498.
 1-Benzoylanthraquinone, *tribromo*-, A., 846.
 Benzoyl-*dl*-asparagine, A., 77.
 3-Benzoyl-6:7-benzocoumarin, A., 494.
o-Benzoylbenzoic acid, production of derivatives of, (P.), B., 753.
o-Benzoylbenzoic acid, 3:4-*dichloro*-, nitro- and amino-derivatives of, (P.), B., 667.
 3'-chloro-4'-hydroxy-, A., 1063.
 7-Benzoylbenzopentindole, A., 366.
 Benzoylbenzothionaphthencarboxylic acids, A., 1163.
 1-Benzoyl-4:6-benzylidene- β -glucose, A., 1275.
 ϵ -*N*-Benzoyl- α -(*N*-benzyl-*dl*-leucyl)-*dl*-lysine, A., 767.
 4-Benzoyl-1-benzyl-naphthalene, 5-nitro-, A., 732.
 4-Benzoyl-1-benzyl-naphthalene-5-sulphonic acid, and its derivatives, A., 732.
 6-Benzoyl-4-benzyl-*m*-xylene, A., 833.
 Benzoyl-*di*-bromoacetamide, A., 91.
 ϵ -*N*-Benzoyl- α -(*dl*- α -bromo-*isohexyl*-*dl*-alaninyl)-*dl*-lysine, A., 767.
 ϵ -*N*-Benzoyl- α -(*dl*- α -bromo-*hexyl*)-*dl*-lysine, A., 767.
 ϵ -*N*-Benzoyl- α -(*dl*- α -bromo-*propionyl*)-*dl*-lysine, A., 767.
 Benzoylbutyric acids, *o*-amino-, 5-chloro-2-amino- and nitroamino-cinnamoyl derivatives, A., 1166.
 Benzoylcampor, metallic derivatives, absorption spectra of, A., 1110.
 aluminium and beryllium derivatives, mutarotation of, A., 1134.
N-Benzoyl-*o*-chlorobenzenesulphonamide, *o*-chloro-, A., 619.
 Benzoyl-2'-chloro-2-methylidiphenylamine, A., 501.
 7-Benzoyl-6:14-dihydrobenzopentindole, 14-nitro-6-hydroxy-, A., 366.
 7-Benzoyl-9:10-dihydro- α' - β' -naphthapentindole, and 5-nitro-, A., 366.
 Benzoyl-*p*-dimethylaminophenylcarbinol, A., 225.
 Benzoyl-*p*-dimethylaminophenylcarbinol, *p*-chloro-, A., 1158.
 Benzoyl-*p*-dimethylaminophenylmethane. See *p*-Dimethylamino-deoxybenzoin.
 4-Benzoyl-1:6-dimethylnaphthalene, A., 612.
 4-Benzoyldiphenyl ethers, amino-, and their derivatives, and nitro-, A., 487.
 sulphide, 4'-nitro-, A., 487.
 Benzoyldiphenylacetic acid, derivatives of, A., 955.
 α -Benzoyl- $\beta\beta$ -diphenylethylene oxide, A., 354.
 5-Benzoyl-3:4-diphenyl-2-ethylisoxazole, *p*-chloro-, and its salts, A., 369.
 Benzoyldiphenylmethyl bromide, action of phenol on, A., 622.
 2:3-(Benzoyleneazimino)-9:10-phenazine, A., 744.
 Benzoylenemorphanthridine, A., 624.
 Benzoylenemorphanthridone, A., 624.
 9-Benzoylfluorene-9-carboxylic acid, methyl ester, A., 955.
 Benzoylformic acid, *i*- β -octyl ester, A., 1154.
 Benzoylformic acid, *p*-nitro-, A., 1418.
 Benzoyl-*d*-glucosamine, A., 830.
 1-Benzoyl- β -glucose, synthesis of, and its tetra-acetate, A., 1275.
 Benzoylglycylaspartic acid, A., 124.
N-Benzoylglycylglucosamine, A., 470.
 Benzoylglyoxylcarbamide, A., 632.
N-Benzoylheptamethyleneimine, A., 75.
 Benzoyl-*dl*-leucine, *o*-amino-, anhydride, and *o*-nitro-, A., 124.
 ϵ -*N*-Benzoyl- α -(*dl*-leucyl-*dl*-alaninyl)-*dl*-lysine, A., 767.

- Benzoyl-*dl*-leucylglycine, *p*-amino-, and its methyl ester, *o*-chloro-, and *o*-nitro-, A., 124.
- ϵ -*N*-Benzoyl- α -*dl*-leucyl-*dl*-lysine, A., 767.
- Benzoyl-luteolinidin chloride, A., 1425.
- Benzoylmetazonic acid, potassium salt and derivatives, A., 1157.
- Benzoyl-*p*-methoxybenzylamine, A., 732.
- Benzoylmethoxyisochavibetol, A., 954.
- Benzoylmethoxyphenylcarbinols, and their semicarbazone, A., 354.
- β -Benzoyl- α -(*p*-methoxyphenyl)propionitrile, A., 726.
- γ -Benzoyl- β -methylbutyric acid, A., 1427.
- β -Benzoyl- α -(3:4-methylenedioxyphenyl)propionic acid, and its derivatives, A., 726.
- o*- α -Benzoyl- α -methylethylbenzoic acid, A., 340.
- 1-Benzoylmethylglyoxime, amino-, and its acetyl derivative, A., 715.
- 8-Benzoyl-4-methyl-1-naphthoic acid, A., 1157.
- γ -Benzoyl- β -methylpropane- α -dicarboxylic acid, A., 1427.
- 3-Benzoyl-1:4-methyl- β -quinol, 5-bromo-, A., 845.
- 3-Benzoyl-1:4-methylquinonitrile, 5-bromo- and 5-nitro-, A., 845.
- Benzoylmethylthionaphthencarboxylic acids, chloro-, A., 1163.
- Benzoylmethyltryptamines, and *m*-chloro- and *p*-nitro-, A., 855.
- Benzoylmuscarine chloroplatinate, A., 1279.
- 1-Benzoylnaphthalene-4-sulphonic acid, and its derivatives, A., 732.
- 2-Benzoyl-3-naphthoic acid, and *p*-chloro-, and their methyl esters, A., 1064.
- Benzoylnaphthoic acids, methyl esters, A., 1063.
- 1-Benzoyl- β -naphthol, and its methyl ether, A., 1292.
- 1-Benzoyl-5(naphthoyl)-2:6-dimethylnaphthalenes, A., 612.
- ϵ -*N*-Benzoyl- α -*dl*-norleucyl-*dl*-lysine, A., 767.
- Benzoylnorvalines, and their derivatives, A., 220.
- Benzoyloxyacetothioamide, A., 353.
- 4-Benzoyloxybenzaldehyde, 2-hydroxy-, A., 1304.
- α -Benzoyloxy-*n*-butyrthioamide, A., 353.
- 4-Benzoyloxy-3:5-dimethoxyacetophenone, and its acetyl and benzoyl derivatives, A., 1424.
- 4-Benzoyloxy- ω -formoxy-3:5-dimethoxyacetophenone, A., 1424.
- 5-Benzoyloxy-3- β -galactosidoxylflavylium chloride, 7:3':4'-trihydroxy-, A., 1425.
- 5-Benzoyloxy-3- β -galactosidoxyl-3'-methoxyflavylium chloride, 7:4'-dihydroxy-, A., 1425.
- α -4-Benzoyloxy-3-methoxyphenylethyl chloride, A., 839.
- 4-Benzoyloxy-3-methoxyphthalide, and *m*-nitro-, A., 500.
- l*- α -Benzoyloxyphenylacetic acid, ethyl ester, A., 1291.
- α -Benzoyloxypropionthioamide, A., 353.
- 8-Benzoyloxyquinoline hydrochloride, A., 98.
- 5-Benzoyloxy-3-*O*-tetra-acetyl- β -glucosidoxyl-4'-acetoxy-3':5'-dimethoxyflavylium chloride, 7-hydroxy-, A., 1424.
- 5-Benzoyloxy-3-*O*-tetra-acetylglucosidoxyl-4'-acetoxy-3'-methoxyflavylium chloride, 7-hydroxy-, and its diacetyl derivative, A., 1425.
- 4-Benzoyloxy- ω -*O*-tetra-acetyl- β -glucosidoxyl-3:5-dimethoxyacetophenone, A., 1424.
- 5-Benzoyloxy-7- β -tetra-acetylglucosidylflavylium chloride, A., 1424.
- Benzoylphenylacetylene, *p*-nitro-, A., 235.
- 2-Benzoyl- α -phenylaminoglyoxime, and its acetyl derivative, A., 223.
- 2-Benzoyl- α -phenylchloroglyoxime, A., 223.
- β -Benzoyl- α -phenylethylthiolacetic acid, A., 1156.
- 3-Benzoyl-5-phenyl-1:2:4-oxadiazole, and its derivatives, A., 715.
- γ -Benzoyl- β -phenylpropane- α -dicarboxylic acid, methyl ester, A., 1392.
- β -Benzoyl- α -phenylpropionamide, A., 726.
- β -Benzoyl- α -phenylpropionitrile, hydrolysis of, A., 726.
- 1-Benzoyl-4-propionynaphthalene, and its oxime, A., 732.
- 4-Benzoylisopropylaminophenyl benzoate, 2-amino-, benzoyl derivative, A., 837.
- Benzoylpyrazole, A., 1168.
- 2-Benzoylpyridine, *o*-nitro-, A., 1165.
- 1-Benzoylpyrrole-2-aldehyde, and its derivatives, A., 362.
- O*-Benzoylquinol, and its tetra-acetylglucoside, A., 201.
- 5-Benzoylquinoline, 8-hydroxy-, and its salts and oxime, A., 98.
- 1-Benzoyl-2:3:4:6-tetra-acetylglactose, A., 1400.
- Benzoyltetra-acetyl- α -glucosamine, A., 830.
- 2-Benzoyl-4- β -tetra-acetylglucosidyl-6-*O*-methylphloroglucinaldehyde, A., 1424.
- 5-*O*-Benzoyl-4'-*O*-tetra-acetylglucosidylpelargonidin chloride, A., 1424.
- 2-Benzoyl-4- β -tetra-acetylglucosidylphloroglucinaldehyde, A., 1424.
- Benzoylthionaphthencarboxylic acids, and amino-, 3-bromo-, 3-chloro- and nitro-, and their derivatives, A., 1163.
- 1-Benzoyl-3:4:6-triacetylglactose, A., 1400.
- 8-Benzoylvaleric acid, ethyl ester, preparation of, A., 66.
- Benzoyl-*o*-xenylamines, nitro-, A., 1308.
- Benzpenthienes, 4-amino-, and their derivatives, A., 1163.
- 3:4-Benz-9:10-phenanthraquinone, A., 1420.
- 3:4-Benzphenanthrene, and its picrate, A., 1420.
- 3:4-Benz-1-phenanthroic acid, A., 1420.
- Benzpinacolin alcohol, acetate, A., 956.
- Benzthiazole derivatives, antiseptic and toxic action of, A., 763.
- Benzthiazole, 5-chloro-, and its derivatives, A., 1075.
- 5-chloro-, 5-fluoro-, and 5-iodo-1-amino-, and their derivatives, A., 969.
- thiol-, manufacture of, (P.), B., 13.
- 1-thiol-, ethyl ether of, A., 1170.
- 2-thiol-, manufacture of, (P.), B., 623.
- Benzthiazoline, 5-chloro-, and its derivatives, A., 1075.
- Benzthionaphthens, A., 1163.
- Benzthiophanthracene, A., 1163.
- Benzthiophanthrenquinol *di*benzoate, A., 1163.
- Benzthiophanthrenquinone, and *dihydroxy*-, and their derivatives, and *mono*- and *di*-amino-, aminohydroxy-, 2-bromo-, 2-chloro-, and trihydroxy-, A., 1163.
- Benzthiophanthrenquinone-3-aldehyde, and its azine, A., 1164.
- Benzthiophanthrenquinonecarboxylic acid, and its derivatives, A., 1164.
- Benzthiophanthrone, A., 1163.
- Benztriazines, formation of, from *o*-aminophenylsemicarbazides, A., 1074.
- 1:2:3-Benztriazole, 4-bromo-, A., 851.
- 1:2:3-Benztriazoles, nitro-, alkylation of, A., 239.
- Benz-3:4:5-trimethoxyanilide, A., 631.
- Benzyl alcohol, density of mixtures of chloroform and, A., 295.
- oxidation of, by chloronitrobenzenes, A., 1049.
- condensation of, with *p*-cresol, A., 1047.
- with *cyclohexene*, in presence of phosphorus pentoxide, A., 349.
- Benzyl alcohol, 5-nitro-2-amino-, A., 855.
- Benzyl azide, additive compounds of, A., 489.
- bromide, 2:4-dinitro-, A., 474.
- tert*-butyl ether, A., 334.
- chloride, dipole moment of, A., 669.
- reaction of, with water, A., 1016.
- preparation of benzaldehyde from, A., 353.
- 4-nitro-*o*-cyano-, A., 727.
- 2:3-dichloro-10-benzylanthranylether, A., 1294.
- methyl ether, 3:5-dichloro-4-hydroxy-, A., 1153.
- thiocyanate, A., 1408.
- β -Benzyl sulphide, salts of, A., 1411.
- Benzylamine, condensation of, with propylene oxide, A., 720.
- colour reaction of, A., 638.
- Benzylamine, *p*-nitro-, oxidation of, A., 1294.
- Benzylamines, *p*-amino-, and *p*-halogeno-, salts of, A., 834.
- α -Benzylaminoisopropyl alcohol, picrate of, A., 720.
- Benzyl*di*amino- γ -triazine, salts and acetyl derivatives of, A., 101.
- δ -Benzylaminovaleric acid hydrochloride, A., 1306.
- Benzylammonium benzenesulphonate, A., 1045.
- Benzylanthracene-2-carboxylic acids, A., 619.
- α -Benzylbenzoic acid, 3:4'-dichloro-, A., 1294.
- 2'-hydroxy-, A., 225.
- α -Benzylbenzoic acids, amino-, manufacture of, (P.), B., 290.
- 6-halogeno-3-amino-, and their derivatives, (P.), B., 918.
- Benzylbenzo- β -naphthaspiropyran, A., 964.
- α -Benzylbutaldehyde, A., 1056.
- β -Benzylbutanetricarboxylic acids, and their ethyl esters, A., 603.
- β -Benzylbutyl alcohol, A., 1056.
- Benzylbromoacetaldehyde, transformation of, A., 90.
- Benzylcellulose, A., 203.
- Benzylchromanones, *tri*- and *tetra*-hydroxy-, and their acetyl derivatives, A., 361.
- Benzylchrysofluorene, A., 732.
- 3-Benzyl-*p*-cresol, and 5-bromo-, and their derivatives, A., 1047.
- Benzyl-*o*-cresols, and their derivatives, A., 83.
- Benzyl*di*benzyl sulphides, A., 1411.
- Benzyl*di*benzylsulphones, A., 1411.
- β -Benzyl*di*benzylsulphoxide, A., 1411.

- Benzyl-diethylamine, *p*-amino-, A., 751.
 2-Benzyl-diethylamino-6-methoxyquinoline, *p*-amino-, methiodide hydrochloride, A., 751.
 2-Benzyl-diethylaminoquinoline, *p*-amino-, methiodide hydriodide, A., 751.
NNN-Benzyl-diethyl-*N'N'N'*-benzyl-diethyl- β -methoxytrimethylenediammonium chloroplatinate, and *p*-bromo-, A., 1042.
 Benzyl-diethyl- γ -diethylamino- β -methoxy-*n*-propylammonium chloroplatinate, and *p*-bromo-, A., 1042.
 Benzyl-dimethylammonium salts, A., 1045.
 9-Benzyl-1:4-dimethylanthracene, A., 341.
 9-Benzyl-2:3-dimethylanthracene, and 10-bromo-, A., 612.
 9-Benzyl-2:4-dimethylanthracene, α -bromo-, A., 1058.
 Benzyl-diphenylacetic acid, derivatives of, A., 955.
d- α -Benzylethylamine, formation of, from *d*- α -benzylpropionamide, A., 1053.
 β -Benzylglutaric acid, γ -cyano-, ethyl ester, A., 603.
 Benzylglycollaldehyde, transformation of, A., 90.
 β -Benzylheptyl alcohol, and its esters, A., 1056.
 β -Benzylhexanol, and its phenylurethane, A., 1269.
 1-Benzyl-1'-cyclohexene, A., 1280.
 α -Benzylhexoic acid, and its esters, A., 1269.
 Benzylhomoveratrylamine, and its salts, A., 1048.
N-Benzylhydantoin-3-acetamide, A., 966.
 Benzyl- γ -hydroxymethylcarbamides, α -nitrohydroxy-, A., 614.
 Benzyl-*mono*- and -*di*-hydroxy- β -phenylethylamines, and *mono*- and -*di*-hydroxy-, and their salts, A., 1048.
 Benzylidene chloride, dipole moment of, A., 669.
 ω -Benzylideneacetanilide, ω -cyano-*o*-nitro-, A., 236.
 ω -Benzylideneaceto-*p*-toluidide, ω -cyano-*o*-nitro-, A., 237.
 α -Benzylideneadipic acid, A., 1057.
 Benzylidene-*N*-aminocamphorimide, and 3:4-*di*hydroxy-, A., 1301.
 Benzylidene-2-aminofluorenone, and *p*-amino-, acetyl derivative, *mono*- and -*di*-hydroxy-, and nitro-, A., 1409.
 6-Benzylideneamino-2-*p*-nitrophenyl-5-methylbenzthiazole, *p*-nitro-, A., 498.
 Benzylideneaniline, reduction of, by magnesium and magnesium iodide, A., 1045.
 Benzylideneaniline, 2:4-*di*-trinitro-, A., 731.
 2-Benzylidene-6-*p*-anisylidenecyclohexanone, A., 1057.
 Benzylidenebenzamidoacetanilide, *o*-nitro-, A., 743.
 Benzylidenebenzamidoacetotoluidides, *o*-nitro-, A., 743.
 Benzylidene- α -benzylacetoacetic acid, A., 964.
 Benzylidenebenzylamines, *p*-amino-, acetyl derivative, and *p*-halogeno-, A., 834.
 Benzylidenebis(dihydro- α -naphthafuran-2-one), A., 737.
 Benzylidene-*p*-bromoacetophenone, and its *antioxime*, A., 622.
 Benzylidene-*p*-bromobenzylamine, A., 834.
 α -Benzylidene- $\delta\beta$ -butenoic acid, and its dibromide, and *o*-chloro- and *p*-nitro-, A., 1413.
 Benzylideneacoutchouc, B., 819.
 Benzylidene-*o*-chloroacetophenone, and its *antioxime*, A., 622.
 Benzylidene-*p*-chlorobenzylamine, A., 834.
 Benzylidenechromanone, and *di*-, *tri*-, and *tetra*-hydroxy-, and their acetyl derivatives, A., 361.
 Benzylidenediacetoacetic acid, ethyl ester, action of sulphuric acid and bromine on, A., 1293.
 Benzylidenedihydronaphthafuranones, and their dibromides, A., 737.
 Benzylidene-*p*-dimethylaminobenzylamine, and its methiodide, A., 834.
 9-Benzylidenedimethyl-9:10-dihydroanthracenes, 10-bromo-, A., 341, 1058.
 Benzylidenedi- β -naphthol, *m*-chloro-. See Phenyl-di-2-hydroxy- α -naphthylmethane, *m*-chloro-.
 1-Benzylidene-2:4-diphenyltetrazene, A., 1156.
 Benzylidene-embelin, A., 1061.
 5:8-Benzylideneglucosamic acid, ethyl ester, derivatives of, A., 1402.
 4:6-Benzylidene- α -*d*-glucose, and its derivatives, A., 1275.
 Benzylidenecyclohexane, A., 1280.
 Benzylidenecyclohexanone, derivatives of, A., 1057.
 Benzylidenehydantoin, *o*-nitro-, A., 650.
 5-Benzylidenehydantoin, *o*-nitro-, and its derivatives, A., 366.
 Benzylidene-*p*-iodobenzylamine, A., 834.
 Benzylidenemalonanilic acid, *o*-nitro-, A., 1155.
 Benzylidenemalon-*o*-toluidic acid, *o*-nitro-, A., 1155.
 Benzylidene-*p*-methylbenzylamine, A., 834.
 Benzylidene-3-naphthylhydrazide, and nitro-, A., 479.
 Benzylideneneobilirubic acid, methyl ester, A., 497.
 Benzylidene-4-phenyl-2-ethylthiosemicarbazone, A., 951.
 Benzylidene- $\Delta\alpha$ -propene- $\alpha\gamma$ -diol, A., 605.
 Benzylidenepyrvic acid, preparation of, A., 1054.
 and its derivatives, A., 1155.
 action of bromine on, and its dibromide, A., 221.
 Benzylidenesorbitol, detection of, colorimetrically, B., 1024.
 Benzylidenethiohydantoin, and amino-, *mono*- and -*di*-hydroxy- and nitro-, and their acetyl derivatives, A., 1170.
 3-Benzylimino-5-benzylthiol-4-*o*-tolylurazole, A., 100.
 α -Benzylmalonic acid, amino-, ethyl ester, and its derivatives, A., 338.
 Benzylmercurithiosalicylic acid, A., 637.
 Benzylmethylamine, and its salts, A., 886.
 β -Benzylmethylaminoethyl benzoate hydrochloride, and its derivatives, A., 725.
 γ -Benzylmethylaminopropyl benzoate hydrochloride, and its derivatives, A., 725.
 Benzyl-(γ -methyl- $\Delta\beta$ -butenyl)malonic acid, and its ethyl ester, A., 351.
l-Benzylmethylcarbinol, α -naphthylurethane of, A., 333.
 β -Benzylmethylglutaric acids, and γ -cyano-, ethyl ester, A., 603.
 α -Benzyl- δ -methyl- $\Delta\gamma$ -hexenoic acid, A., 351.
 α -Benzyl- δ -methyl-*n*-hexoic acid, γ -hydroxy-, lactone of, A., 351.
 Benzyl methyl ketone, oximino-, cobalt salt and phenylhydrazone, A., 1157.
 γ -Benzyl- β -methyl- $\Delta\alpha$ -propene- $\alpha\gamma$ -dicarboxylic acid, α -cyano-, ethyl ester, A., 608.
 1-Benzyl-3-methylisoquinoline, manufacture of derivatives of, (P.), B., 905.
 Benzylneobilirubic acid, A., 497.
 Benzylloxanthrone-2-carboxylic acids, A., 619.
 6-Benzyl-1-2'-amino-3:4'-dimethoxybenzyl-3:4-dihydroisoquinoline, and its hydrochloride, A., 1077.
 2-Benzyl-*p*-anisidine, and its acetyl derivative, A., 843.
 4-Benzyl-*p*-anisole, and nitro-, A., 479.
 6-Benzyl-1-*p*-anisylmethyl-3:4-dihydroisoquinoline, and its hydrochloride, A., 1077.
 4-Benzyl-6-methoxybenzaldehyde, 2-hydroxy-, A., 1423.
 7-Benzyl-5-methoxyflavylium chloride, 3:4'-*di*hydroxy-, A., 1423.
 4-Benzyl-3-methoxystyrene, ω -nitro-, preparation of, A., 1417.
 6-Benzyl-1-2'-nitro-3:4'-dimethoxybenzyl-3:4-dihydroisoquinoline, and its salts, A., 1077.
 4-Benzyl-*p*-phenylarsinic acid, and its barium salt, and 3-nitro-, and its derivatives, A., 1314.
 3-Benzyl-*p*-phenylethylamine, and β -nitro-, and their salts, A., 1077.
 2-Benzyl-*p*-pyridine, 5-nitro-, A., 234.
 Benzylphenols, chlorine derivatives of, A., 1047.
 mercury derivatives of, A., 1078.
 Benzyl- β -phenylethylamines, substituted, preparation of, A., 1048.
 Benzylphthalamic acids, *p*-halogeno-, A., 834.
 Benzylphthalimides, *p*-halogeno-, A., 834.
 Benzylpiperidine, nitration of, A., 739.
 2-Benzylpiperidine, and its derivatives, A., 1072.
 2-Benzylpiperidine-1-acetic acid, ethyl ester, and its hydrochloride, A., 1072.
N-Benzyl-2-piperidone, A., 1306.
 Benzyl piperonyl ketone, and its semicarbazone, A., 959.
d- α -Benzylpropionamide, and its conversion into *d*- α -benzylethylamine, A., 1053.
 Benzyl isopropyl ketoxime, A., 1058.
 2-Benzylpyridine picrate, A., 1072.
 2-Benzylpyridine, *o*-amino-, and *o*-nitro-, and their hydrochlorides, and *o*-nitro-*p*-amino-, A., 1165.
 1-Benzylpyridinium chloride, molecular salt of, with benzidine, A., 740.
 1-Benzyl-2-pyridone, 5-iodo- and 5-nitro-, A., 234.
N-Benzylpyridonearsinic acids, A., 1315.
 2-Benzylpyrrolone, salts of, A., 849.
 Benzylsulphone, A., 1409.
 Benzylsulphonic acid, *o*-cyano-, sodium salt and chloride, A., 727.
 p -Benzylsulphonylphenylhydrazine, A., 1409.
 o -Benzylthiophenylglyoxylic acid, A., 1163.
 6-Benzyl-1:3:5-triazine, 2-amino-4-thiol-, and its salts, A., 368.
 Benzyltrimethylammonium salts, A., 1045.
 Berberine methyl ether hydrochloride, A., 242.
Berberis Thumbergii, alkaloids of, A., 242.
 Bergamot, manufacture of, in Calabria, B., 781.
 Bergamot oil, B., 318.

- Beriberi**, effect of muscular exercise in, A., 382.
glyoxalase-co-enzyme ratio in, A., 773.
constituents of heart muscle in, A., 254.
- Beryl**, extraction of beryllium, caesium, and rubidium oxides from, B., 438.
- Beryllium**, isotopes of, A., 403.
production of, (P.), B., 354.
from sublimates containing sulphur and aluminium, (P.), B., 539.
working up of minerals containing, (P.), B., 538.
recovery of, from its ores, (P.), B., 1010.
from minerals, (P.), B., 539.
spectrum of, A., 779.
vacuum spark spectra of, A., 539.
furnace spectrum of, A., 5.
specific resistance of, A., 30.
measurement of specific heat of, A., 591.
alloyability of, with calcium and magnesium, B., 845.
- Beryllium alloys**, production of, (P.), B., 847.
improvement of, A., 1119.
with aluminium, (P.), B., 302.
with aluminium and silicon, A., 901.
with iron, B., 845.
- Beryllium compounds**, electrolysis of, A., 1249.
- Beryllium salts**, hydrolysis of, A., 910.
- Beryllium halides**, hydrolysis in solutions of, A., 565.
action of phosphine on, A., 583.
hydride, band spectrum of, A., 403.
oxide, pure, extraction of, from beryl, B., 438.
melting equilibrium of zirconium dioxide with, A., 431.
separation of, from aluminium oxide, A., 452.
silicate, analysis of rocks of, A., 927.
sulphate tetrahydrate, structure of, A., 1218.
- Beryllium organic compounds**:—
Beryllium benzoylcampor, mutarotation of, A., 1134.
- Beryllium determination and separation**:—
analytical chemistry of, B., 845.
determination of, in aluminium, B., 253.
and its separation from aluminium, A., 1024.
- Beverages**, alcoholic, determination of alcohol in, B., 859.
determination of methyl alcohol in, B., 608.
alcohol-reduced, fermented, manufacture of, B., 363.
cereal, stabilisation of, (P.), B., 178.
fermented, removal of alcohol from, (P.), B., 271.
- Bile**, composition of, after relief of biliary obstruction, A., 509.
antibacterial and antitoxic action of, A., 527.
action of acids, alkalis and gastric juice on alkali reserve and sugar content of, A., 112.
phosphatase in, A., 654.
excretion of protein in, A., 387, 1179.
influence of bile acids on salts of, A., 976, 1443.
excretion of sodium salicylate in, A., 509.
influence of adrenalin and insulin on excretion of sugar in, A., 397.
effect of cinchophen derivatives on excretion of uric acid in, A., 1328.
chicken, formation of tauroisolithocholic acid from, A., 733.
ox, cholesterol in, A., 644.
iodine content of, A., 508.
rabbit's, glycocholic acid from, A., 1179.
determination of bile acids in, A., 861, 1443.
determination of bile salts in, A., 251.
determination of porphyrins in, A., 863.
- Bile acids**, A., 352, 841, 1293.
constitution of, A., 956, 957.
dissociation constants of, A., 1369.
synthesis of substances analogous to degradation products of, A., 957.
enzymic hydrolysis of, A., 984.
in relation to carbohydrate metabolism, A., 763.
hypoglycaemic action of, A., 386.
effect of administration of, on urinary phosphate, A., 981.
conjugated, resorption of fats in presence of, A., 513.
determination of, A., 381, 861, 1443.
polarimetrically, A., 509, 976.
in body-fluids and organs, A., 251, 509.
- Bile pigments**, A., 497, 633, 853, 967, 1179, 1420.
production of, in surviving organs, A., 251.
fluorescence spectra of, A., 1443.
distribution of, in the organism, A., 645.
- Bile salts**, action of, on fermenting organisms, A., 1091.
haemolysis by, A., 860.
metabolism of. See under Metabolism.
determination of, in urine, A., 1322.
- Bilirubin**, formation of, A., 644.
absorption spectrum of, A., 644, 1082, 1322.
agglutinating and haemolytic power of, A., 1179.
fate of, in blood-vessels, A., 644.
in urine, A., 381.
detection of, A., 863, 1446.
in serum, A., 977.
determination of, A., 864.
in blood, A., 1084.
in serum, A., 110.
- Binary systems**, A., 310.
fusion curve of, A., 159, 684.
equilibria in, under pressure, A., 1370.
- Binding agents**, aqueous, prevention of foaming in, B., 214.
hydraulic, acceleration of hardening of, (P.), B., 160.
- Bindweed**, effect of chlorates on catalase activity in roots of, A., 1340.
- Biochemical processes**, kinetics of, A., 916, 985.
substances in anhydrous solution, A., 166.
- Biocolloids**, formation of, A., 1437.
- Biological fluids**, state of water in, A., 975.
- Biology**, application of second law of thermodynamics to, A., 655.
- Bioluminescence**, analysis of, A., 654.
- Bios**, A., 263.
- Biotites**, A., 1266.
from Taiwan, A., 1390.
- Birds**, carbohydrate metabolism in, A., 1338.
mineral content of developing embryos of, A., 1321.
formation of uric acid in, A., 515.
- Bird liver oils**, vitamin-A content of, A., 1195.
- Bisacetamide hydrochloride**, preparation of, and its use as acetylating agent, A., 609.
- Bis-5-arseno-2-dimethylaminopyridine**, A., 372.
- Bis-3-arsenopyridine-2-carboxylic acid**, A., 372.
- Bisarsepedine dimethobromide**, A., 750.
- s-Bisbenzoylenebenzimidazole**, A., 744.
- 1:2-Bisbenzthiophanthrenequinone**, A., 1164.
- 2:6-Bisdichloromethylene-1:3:5-oxadithian-3:3:5:5-tetroxide**, and its 4:4-dichloro-derivative, A., 1071.
- 2:6-Bisdichloromethyl-1:3:5-oxadithian-3:3-dioxide-4-carboxylic acid**, esters of, A., 1071.
- Bisdichloro-β-naphthaquinone**, additive compound of, with anti-mony chloride, A., 1061.
- Bis-mono- and -di-chlorovanillylidenebenzidines**, A., 90.
- Bisdiethylaminodisulphide**, A., 942.
- Bisdiisobutylaminodisulphide**, A., 942.
- Bisdiethylaminotrisulphide**, A., 942.
- Bisdihydroanthranil ketone**, A., 208.
- Bis-p-dimethylaminophenyliminoembelin**, A., 1061.
- Bis-(4:7-dimethylcoumarinyl)carbamide**, A., 1162.
- Bisdimethyltrisulphide**, A., 942.
- 2:5-Bisdiphenylacetylpyrrole**, A., 1306.
- Bisdiphenylene oxide sulphone**, A., 1426.
- Bisdiphenylenylacetonedicarboxylic acid**, ethyl ester, A., 1414.
- Bisdiisobutylaminodisulphide**, A., 942.
- Bis-aa'-dipyridylargentic sulphates**, A., 234.
- Bis-aa'-dipyridylargentous nitrate**, A., 234.
- N-N'-Bis-(6-ethoxy-2-phenyl-4-quinolyl)carbamide**, A., 965.
- 4:4'-Bis-α-hydroxybenzylidenedihydrazinotriphenylmethane**, benzoyl derivative, A., 958.
- Bis-2-hydroxynaphthyliminoembelin**, A., 1061.
- Bis-mono- and -di-hydroxyphenyliminoembelins**, A., 1061.
- NN'-Bis-(6-hydroxy-4-quinolyl)carbamide**, A., 237.
- NN'-Bis-(6-methoxy-2-phenyl-4-quinolyl)ethylenediamine**, A., 965.
- NN'-Bis-(6-methoxy-2-phenyl-4-quinolyl)carbamide**, A., 965.
- αβ-Bis-(6-methoxyquinoline-4-carboxylamido)ethane**, and its salts, A., 237.
- NN'-Bis-(6-methoxy-4-quinolyl)carbamide**, A., 237.
- Bismarck brown**, use of, in aniline-black dyeing, B., 483.
- Bismuth**, refining of, (P.), B., 548.
- Bismuth**, hyperfine structure in spectrum of, A., 780, 1345.
Zeeman effect in arc spectrum of, A., 137.
resonance series spectrum of, A., 1204.
ionised, spectrum of, A., 1103.

- Bismuth**, ionised, spark spectra of, A., 8.
 resonance potential of, A., 888.
 ionic migration of, in bismuth products, A., 1454.
 magnetic susceptibility of, in relation to the field, A., 411.
 diamagnetic susceptibility of, A., 28, 1357.
 resistance of, in alternating magnetic fields, A., 29.
 transport number of, in its amalgams, A., 569.
 atomic heat of, A., 792.
 discontinuities at m. p. of, A., 1221.
 crystals, diamagnetism and field strength of, A., 551.
 resistance of, in magnetic fields, A., 552.
 density and conductivity of, in magnetic fields, A., 792.
 grown under magnetic field, thermoanalysis of, A., 292.
 lattice dimensions of, A., 150, 1001.
 Peltier effect in, A., 552.
 displacement of, from solutions, by hydrogen under pressure, A., 1243.
 circulation of, in the organism, A., 260.
 elimination of chlorides and citrates of quinine and, A., 120.
 calcification due to, A., 982.
- Bismuth alloys** with calcium, A., 1118.
 with gold, superconductivity of, A., 1224.
 with lead and with tin, crystal structure of, A., 676.
 with selenium, A., 296.
- Bismuth salts**, determination of arsenic in, B., 199.
- Bismuth hydride**, band spectrum of, A., 664.
 subiodides, A., 323.
triiodido, crystal structure of, A., 549.
 nitrate, basic, detection of lead in, B., 675.
 oxide, equilibrium of, with water, A., 1235.
- Bismuth organic compounds**, manufacture of, (P.), B., 1155.
 complex, A., 1254.
 Bismuth oxyiodido tannates, preparation of, B., 780.
- Bismuth detection and determination** :—
 detection of, A., 1262.
 detection of tellurium in, B., 161.
 determination of, A., 1025, 1386.
 micro-colorimetrically, A., 188.
 with titanous chloride, A., 926.
 in lead ores, B., 25.
 in organic substances without decomposition, A., 702.
 and its separation from lead, A., 588.
- Bismuth-black**, A., 1355.
- Bismuth wire**, extrusion of, B., 117.
- Bis-1:2-naphthothioindigotin-5:5'-dithioglycollic acid**, A., 748.
- Bis-p-phenetyl telluride**, and its derivatives, A., 244.
- NN'-Bis-(2-phenyl-6-hydroxy-4-quinolyl)carbamide**, A., 965.
- Bisphenylimino-embelin**, A., 1061.
- Bis-5-phenyl-2-pyrroleindigo**. See 5:5'-Diphenyl-4:2'-bispyrrol-3-one.
- s-Bis-(2-phenyl-3-quinolyl)carbamide**, and its salts, A., 1307.
- NN'-Bis-(2-phenyl-4-quinolyl)carbamide**, A., 965.
- NN'-Bis-(2-phenyl-4-quinolyl)ethylenediamine**, A., 965.
- s-Bis-(2-phenyl-4-quinolyl-3-methyl)carbamide**, and its salts, A., 1307.
- Bispiperidino-tri- and -tetra-sulphides**, A., 942.
- NN'-Bisquitenylcarbamide**, A., 242.
- Biscyclotelluributane 1:1'-oxydibromide**, A., 373.
- cycloBis-a-thienylbisindoxyl**, A., 104.
- Bisthiobenzothioamide**, A., 942.
- s-Bis-(2-p-tolyl-4-quinolyl)carbamide**, and its salts, A., 1307.
- Bitter substances**, A., 734, 1065.
- Bitumen**, extraction of, from road materials, and determination of sulphur therein, B., 326.
 treatment of, (P.), B., 145.
 hydrogenation of, B., 870.
 suitability of, for building and road construction, B., 974.
 use of, for wound treatment of rubber trees, B., 171.
 manufacture of dispersions of, (P.), B., 379.
 manufacture of mixtures of concrete, sand, tar, and, (P.), B., 975.
 asphalt, B., 142.
 solubility of, B., 671.
 from Alberta sands. hydrogenation of, B., 467.
 from bituminous sands, B., 283.
 from coal, B., 281.
 from Ural crude oil, B., 1033.
 determination of, in asphalt and asphaltic materials, B., 1033.
- Bituminous compositions**, production of, (P.), B., 1037.
 dispersions, manufacture of, (P.), B., 288.
- Bituminous materials**, aqueous dispersions of, (P.), B., 432.
 apparatus for heating of, (P.), B., 872.
 carbonisation of, (P.), B., 793.
 coking of, (P.), B., 190.
 apparatus for low-temperature distillation of, (P.), B., 1001.
 utilisation of distillation gases from, (P.), B., 331.
 testing of, B., 966.
 mixtures for roads, etc., (P.), B., 975.
 testing of, (P.), B., 833.
 rocks, determination of soluble bitumen and organic matter in, B., 829.
 sands, separation and treatment of, (P.), B., 1001.
 surfaces, construction of, for roads, etc., (P.), B., 351.
- Bitural**, manufacture of, B., 202.
- Biuret**, sodium copper derivative, A., 77.
- Biuret reaction**, A., 77, 1428.
- Bixbyite**, crystal structure of, A., 415.
- Black powder**. See under Explosives.
- Black Sea**, photosynthesis on shores of, A., 694.
- Blackleg**. See Anthrax, symptomatic.
- Bladder**, phosphatase activity of transplants of, to the abdominal wall, A., 975.
- Bleaching**, B., 485.
 apparatus for, (P.), B., 155.
 with chlorine and hypochlorite, A., 572, 573, 802.
 of cellulose, (P.), B., 345.
 viscosity control in, B., 754.
 of cellulose fibres, (P.), B., 345, 628.
 of cellulose products, (P.), B., 437.
 of fabrics, B., 969; (P.), B., 801.
 of fabrics or yarns, (P.), B., 584.
 of cotton fabrics with liquid chlorine, B., 534.
 of dyed fabrics, (P.), B., 17.
 of fats, (P.), B., 236*.
 of fibrous materials and of wood pulp, (P.), B., 345.
 of flax, hemp, etc., (P.), B., 155.
 of furs, etc., (P.), B., 243.
 of jute, hemp, etc., (P.), B., 197.
 of textiles, treatment of iron vessels for, (P.), B., 801.
 of viscose artificial silk, (P.), B., 801.
 of textiles and fibrous materials with hydrogen peroxide, (P.), B., 838.
 of vegetable textile materials with peroxides, (P.), B., 922.
 of wood pulp, B., 390, 627, 674.
 of pulp from maritime pine-wood, B., 800.
- Bleaching agents** for flour, etc., production of, (P.), B., 716.
 for flour, soap, etc., (P.), B., 292.
 hypochlorite, (P.), B., 538.
- Bleaching earths**. See under Earths.
- Bleaching machines**, B., 880; (P.), B., 391.
- Bleaching powder**, chemical constitution of, B., 880.
 formation and composition of, A., 50.
 manufacture of, (P.), B., 156, 489, 1093.
 stable, production of, (P.), B., 718.
 determination of manganese in, B., 348.
- Blende**, effect of iron on flotation of, B., 888.
 roasting of, (P.), B., 255.
 activation of, by copper sulphate, B., 25.
 impurities in, and their effect on determination of zinc and lead therein, B., 637.
- crystallography** of, A., 596.
- roast**, determination of magnesium and calcium in, B., 544.
- Blood**, formation of, by the liver, and variation of hæmoglobin content, A., 376.
 as physico-chemical system, A., 753.
 absorption spectrum of, A., 383.
 sedimentation rate of red-corpuscles in relation to protein spectrum of plasma in, A., 973.
 action of light on, A., 111.
 action of X-rays on, A., 765.
 effect of cooling and warming on morphology of, A., 376.
 determination of volume of, A., 639.
 colloid-osmotic pressure of, A., 759.
 determination of rate of circulation of, A., 1439.
 effect of diet on composition of, A., 1086.
 changes in constituents of, during lactation, A., 1183.
 coagulation of, A., 249.
 determination of time of, A., 379.
 action of acids on, A., 974.
 by calcium salts, A., 1088.

- Blood, coagulation of, acceleration of, by eclampsia urine, A., 382.
 proteins in diet in relation to, A., 860.
 relation between, and sugar in, A., 110, 506, 859, 860.
 inhibition of, A., 1441.
 anti-coagulants for, A., 379.
 chemistry of, after operation, A., 382.
 relation of, to intelligence, A., 1083.
 biochemistry of, in disturbance of liver function, A., 645.
 catalytic activity of, A., 754.
 diazotisable constituents of, A., 1440.
 distribution of non-electrolytes between cerebrospinal fluid and, A., 1442.
 effect of venesection on exchange between tissues and, A., 109.
 effect of hyperglycæmia on amylolytic power of, A., 757.
 glycolysis in, A., 378, 504, 505, 640.
 influence of diet and avitaminosis on, A., 973.
 prevention of, by iodoacetic acid, A., 1320.
 glycolysis and lactic acid formation in, A., 859.
 determination of respiratory capacity of, from determination of iron, A., 1079.
 oxygen consumption of, at high altitudes, A., 857.
 effect of administration of alcohol and water on, A., 1087.
 action of aluminium hydroxide sols on, A., 972.
 effect of bromides on, A., 260.
 deproteinisation of, with copper and iron salts, A., 755.
 action of enzymes on groups in, A., 1174.
 passage of antiprothrombin into, after injection of Witte's peptone, A., 249.
 effect of injection of colloidal silver on, A., 127, 128.
 oxidation of ethyl alcohol by, A., 641.
 action of, on morphine hydrochloride, A., 858.
 on uric acid, A., 506.
 acetylcholine in, A., 858.
 acid-base equilibrium of, in pathological conditions, A., 511.
 effect of radiation on acidity of, A., 872.
 effect of diet on unsaturated acids in, A., 385.
 alcohol content of, A., 649.
 amide-nitrogen of, A., 110.
 amino-acids in, in health and disease, A., 1176.
 distribution of, A., 110.
 ammonia in, A., 1080.
 and its precursors, A., 641, 1449.
 bromide distribution in, A., 974.
 bromine and iodine content of, A., 755.
 calcium in, A., 973.
 in epilepsy, A., 864.
 state of carbon dioxide in, A., 1174.
 effect of physical factors on catalase in, A., 641.
 action of ultra-violet light on chlorine in, A., 506.
 chlorine content of, from denervated tissue, A., 1176.
 organic chlorine compound in, A., 248.
 variations in chlorine and urea in, A., 641.
 cholesterol in, A., 248.
 effect of injection of dyes on, A., 649.
 connection between, and adrenaline sensitivity, A., 1096.
 influence of nerve excitation on cholesterol and fat in, A., 1080.
 choline and its esters in, A., 755.
 fate of choline in, A., 506.
 osmotic pressure of colloids in, A., 1080.
 creatinine in, A., 247.
 chemistry of depressor substance in, A., 1080.
 electrolyte equilibrium in, in acidosis, A., 509.
 diastatic enzymes in, A., 1447.
 ergothioneine in, A., 1440.
 glutathione and non-protein-sulphur in, A., 1320.
 histamine and like substances in, A., 1440.
 sexual hormone in, A., 878.
 extraction of insulin from, A., 1096.
 iron in, not combined with hæmoglobin, A., 1440.
 lactic acid in, in acute infections, A., 511.
 lipins of, in relation to fixation of ethyl chloride, A., 1087.
 effect of p_H on, A., 858.
 effect of lipins and proteins of, on water exchange, A., 978.
 action of parathyroid hormone on magnesium content of, A., 528.
 non-protein constituents of, and their distribution, A., 110.
 occurrence and determination of oxalic acid in, A., 1440.
 phosphatase of, A., 1441, 1456.
- Blood, phosphorus in, in health and disease, A., 383.
 after parathyroid removal, A., 645.
 partition of, A., 859.
 acid-soluble, A., 1083.
 variations with age of inorganic phosphorus in, A., 869.
 effect of arsenates on phosphorus exchange and glycolysis in, A., 1320.
 proteins in, and their precipitation, A., 1440.
 acetylation of, A., 245.
 sugar in, in fasting, A., 1440.
 with acid and alkaline diets, A., 1440.
 after administration of sugar, A., 110, 641, 859.
 distribution of, A., 755, 859.
 alimentary curves for, A., 377.
 rotation of, A., 858.
 influence of adrenaline on, A., 127.
 effect of calcium chloride injections on, A., 859.
 effect of drugs on, A., 650.
 influence of the nervous system on, A., 1329.
 influence of nicotine on, A., 517.
 influence of nutrition on, A., 127.
 effect of pain stimuli on, A., 1452.
 fission of tributyrin in, A., 248.
 clearance of urea from, in relation to diuresis, A., 758.
 distribution of uric acid in, A., 858.
 water content of, in asphyxia, A., 758.
- Blood of aquatic animals, toxicity of, A., 1441.
 arterial and venous, colloid-osmotic pressure of, A., 639.
 of children, lactic acid in, A., 1446.
 phosphorus content of, A., 859.
 of cows and bulls, hæmoglobin and phosphorus in, A., 1441.
 crocodile's, physico-chemical properties of, A., 506.
 dogs', effect of diuretics on chlorides in, A., 651.
 of hypophysectomised dogs, hypoglycæmic action of, A., 1453.
 dried, chlorino content of, A., 974.
 of eels, fish, and turtles, distribution of phosphorus, sugar, and hæmoglobin in, A., 506.
 of elderly people, sugar in, A., 859.
 fishes', distribution of sugar in, A., 377.
 fetal, A., 376.
 fowls, sugar in, A., 1176.
 frozen, toxicity of, A., 379.
 goat's, effect of electrolytes on syneresis and clotting of, A., 426.
 horse's, crystalline methæmoglobin from, A., 247.
 human, individual differences in, A., 857.
 calcium in, A., 1461.
 glutathione content in, A., 252.
 hexoses in, A., 377.
 phosphorus in, A., 1081.
 silicic acid in, and its variation on ingestion of silicio acid, A., 378.
 thiol compounds in, A., 758.
 pathological, non-sugar reducing substances of, A., 254.
 determination of catalase and hydrogen peroxide in, A., 519.
 of infants, carbon dioxide absorption curves of, A., 857.
 Malayan, calcium and phosphorus content of, A., 378.
 of mother and child, cholesterol and bilirubin in, A., 858.
 of new born, carbon dioxide content of, A., 857.
- ox, composition of, A., 377.
 acetylcholine in, A., 377, 1080, 1320.
 glucosaminodimannose from proteins of, A., 1175.
 sugar in, A., 377.
 pathological, distribution of chloride and hydrogen carbonate in, A., 1182.
 rabbit's, influence of human placental extract on coagulation of, A., 379.
 effect of muscle extracts on sugar in, A., 1080.
 lactate in, after injection of sodium lactate, A., 1452.
 of sheep, A., 1441.
 venous, carbon dioxide and oxygen tension of, A., 857.
 of women, variations of non-protein-nitrogen in, A., 869.
- Blood detection and determination :—
 analysis of, A., 973, 1448.
 detection of, in forensic practice, A., 1174.
 determination in, of alcohol, A., 248, 1440.
 of allantoin, A., 1080.
 of amino-acids, A., 247, 1082.
 of amino-nitrogen, A., 641.
 of bilirubin, A., 1084.
 of calcium, A., 248, 378.

Blood detection and determination:—

- determination in, of calcium and phosphorus, A., 506.
- of carbon monoxide and oxygen, A., 246.
- of catalase, A., 111.
- of cholesterol, A., 505.
- of chlorides, A., 641.
- with dichlorofluorescein as indicator, A., 1080.
- of cholesterol, A., 755, 1080.
- of cholesterol and fat, A., 858.
- of choline, A., 1320.
- of copper, microchemically, A., 378.
- of dextrose, A., 859, 1320.
- of fat, A., 1440.
- of hæmoglobin, A., 1079, 1175.
- of p_H , A., 248, 1441.
- of hypoxanthine and xanthine, A., 1440.
- of inorganic sulphates, A., 1177.
- of iodine, A., 538, 755.
- of iron, A., 974, 976, 1176.
- of lactic acid, A., 973, 1320.
- of lactic acid, phosphates, and sugar, A., 859.
- of nitrogen, colorimetrically, A., 247.
- of non-protein-nitrogen, A., 858.
- of phosphatides, A., 640.
- of phosphorus, A., 859.
- of proteins, A., 1080.
- of sugar, A., 110, 377, 378, 505, 859, 1176.
- glass light filter for, A., 134.
- of reducing sugars, A., 1320.
- of sulphur, A., 755, 1177.
- of unfermentable substances, A., 377.
- of urea, A., 505, 1319.
- of uric acid, A., 378, 755, 858.
- of volatile substances, A., 1319.
- of water, A., 504.
- Blood-albumin.** See under Albumin.
- Blood-corpuscles,** influence of chlorophyll content of fodder on formation of, A., 504.
- red, effect of diet on formation of, A., 1439.
- determination of number of, in suspensions, A., 376.
- velocity of sedimentation of, A., 109.
- oxidation of, A., 504.
- effect of atmosphere pressure on resistance of, to sodium chloride solutions, A., 507.
- factors affecting respiration of, A., 108.
- effect of hæmins on respiration of, A., 109.
- action of phenylhydrazine and phenylhydroxylamine on respiration of, A., 753.
- activation of carbohydrates in, A., 1175.
- sensitisation of, in hæmolysis, A., 1177.
- phosphate in metabolism of, B., 108.
- combination of thymol with stroma-substance of, A., 639.
- free water in, A., 504.
- of various animals, glycolysis and phosphoric acid exchange in, B., 108, 109.
- human, effect of sunlight on, A., 973.
- mammalian, isoelectric point of, A., 109.
- and white, deformability and wetting properties of, A., 1079.
- reticulocyte, staining of, with brilliant-cresyl-blue, A., 1079.
- white, effect of hydrochloric acid on number of, A., 109.
- glycerophosphatase of, A., 654.
- tryptase of, A., 1174.
- human, proteolytic enzymes in, A., 376.
- insulin reaction of, A., 1096.
- Blood-meal,** nutritive value of proteins of, A., 385.
- Blood pigments,** A., 376.
- catalytic action of, A., 857.
- oxidation increased by, A., 109.
- Blood-plasma,** effect of high altitudes on constituents of, A., 982.
- equilibrium of, with cerebrospinal fluid, A., 508, 1322.
- action of ultra-violet radiation on proteins of, A., 383.
- horse's, protein-sugar in, A., 377.
- human, determination of inorganic sulphate in, A., 1176.
- Blood-serum,** physical properties of, and of its proteins, A., 1079.
- variation in number of particles in, A., 165.
- dialysis of, A., 1320.
- influence of inorganic constituents of, on physical condition, A., 506.
- constituents of, in arterial hypertension, A., 1324.
- deproteinising of, A., 248.

- Blood-serum,** action of, on morphine hydrochloride in presence of hydrogen peroxide, A., 858.
- dog's, refractive index of, A., 1175.
- horse's, α -lipase in, A., 1456.
- detection of uric acid in, spectrographically, A., 858.
- determination of calcium in, A., 641.
- determination of calcium, cholesterol, and phosphorus in, A., 377.
- determination of carbon and nitrogen in crystalloid substances of, A., 247.
- determination of hydrogen ions in, A., 505.
- determination of inorganic phosphorus in, A., 1081.
- determination of proteins in, A., 1319.
- determination of sodium in, A., 641.
- determination of uric acid in, A., 1176.
- Blood-vessels,** frog's, effect of Ringer's solution on, A., 118.
- Blow-fly.** See *Lucilia sericata*.
- Blue, transmitted, in microscopy, A., 408.
- "Blue acid," formation of, in lead-chamber manufacture of sulphuric acid, B., 585.
- Board,** composite, manufacture of, (P.), B., 843.
- insulating. See under Insulating.
- laminated wood, production of, (P.), B., 721.
- waterproof, (P.), B., 159.
- Bodies,** black, application of Stefan-Boltzmann law to radiation from, A., 17.
- Body, human, loss of weight of, after death, A., 1321.
- Body fat, effect of ingested cotton-seed oil on, A., 1183.
- Body fluids,** regulation of mineral content of, A., 109.
- human, A., 864.
- photometric analysis of, A., 1322.
- Boilers,** heating of, with gas from coke-ovens, B., 745.
- effect of scale in, on heat transmission, B., 613.
- purification of water for, B., 745.
- prevention of scale formation in, (P.), B., 745, 826, 1031.
- prevention of silica scale in, with sodium aluminate, B., 701.
- high-pressure, at Mannheim, B., 909.
- mercury, (P.), B., 139, 865.
- pulverised-fuel- and stoker-fired, plant for preparing coal for, at works of Synthetic Ammonia & Nitrates, Ltd., B., 830.
- steam, legal requirements for, in chemical industry, B., 421.
- operation of, (P.), B., 142.
- disincrustant for, (P.), B., 1125.
- prevention of scale in, (P.), B., 423.
- briquettes for, (P.), B., 1125.
- removal of sludge from water from, (P.), B., 142.
- breaking of foam in, (P.), B., 702.
- vertical water-tube, for waste heat, (P.), B., 370.
- waste heat, with horizontal settings, B., 139.
- Boiler tubes,** chromium steel for, (P.), B., 764.
- Boiler water.** See under Water, boiler.
- Boiling point,** theory of, A., 1222.
- standard for determinations of, A., 155, 156.
- nomograph for, A., 1145.
- extension of Ramsay and Young's rule for, A., 552.
- relation between structure and, A., 25.
- relation between melting point, critical temperature, and, A., 31.
- of organic liquids, A., 294.
- detection of solids by means of raising of, A., 1022.
- Boleite,** A., 331.
- crystal structure of, A., 671.
- Bolometer,** construction of, A., 805.
- Bombinator igneus,** phrynolysin from, A., 252.
- Bone,** composition of, A., 759, 881.
- effect of fluorides on, A., 518.
- formation of, A., 864.
- hexosephosphoric esters in, A., 258.
- effect of magnesium salts on, A., 1451.
- relation between parathyroids, calcium metabolism, and, A., 1327.
- treatment of, (P.), B., 1011*.
- skeletal substance of, A., 861.
- composition and formation of, A., 1442.
- preservation of, (P.), B., 211.
- phosphatase of plasma in disease of, A., 263.
- of cattle, effect of age and nutrition on calcium phosphate: calcium carbonate ratio in, A., 649.
- of growing chicks, calcium-phosphorus ratio in, A., 1185.
- chicken, effect of winter sunlight on formation of, A., 882.
- fractured, blood-calcium in healing of, A., 511.

- Bone, preparation and analysis of samples of, A., 643.
 X-ray analysis of, A., 508.
 calcium assimilation indicated by analysis of, A., 1451.
- Bone black, manufacture of, (P.), B., 286.
- Bone marrow, lipins of, A., 1442.
- Bonellin, fluorescence of, A., 998.
- Bonnemaïsonia asparagoides*, liberation of iodine from, by ultra-violet light, A., 132.
- Borax. See Sodium borate.
- Bordeaux mixture, solubility of, B., 587.
 effect of, on drought injury, B., 1023.
 determination of lead and copper in, B., 1047.
- Boric acid. See under Boron.
- Borides. See under Boron.
- Borneol, separation of, from camphor, by formation of tribornyl borate, A., 492.
- dl*-isoBorneol, 4-chloro-, A., 1301.
- n*- and *iso*-Borneols, dinitrobenzoates of, and their additive compounds with α -naphthylamino, A., 1068.
- dl*-Borneolcarboxylic acids, A., 1161.
- rac*-*o*- and *p*-*iso*Borneolcarboxylic acids, A., 1161.
- dl*-Borneolphosphoric acid, asymmetric cleavage of, by taka- and yeast-phosphatase, A., 125.
- Bornyl chloride, depression of freezing point for, A., 796.
mono- and *di*-hydrogen orthophosphates, preparation of, A., 1422.
- isoBornylamine, and its derivatives, A., 736.
- dl*-Bornylenecarboxylic acid, hydrazide of, A., 1161.
- Borobenzoic acids, and their salts, A., 244.
- Boron, atomic weight and isotopes of, A., 1208.
 isotope ratio of, A., 15.
 valency of, A., 1280.
 two-electron spectrum of, A., 779.
 vacuum spark spectra of, A., 539.
 biochemistry of, A., 655.
 crystalline, A., 1377.
- Boron compounds, regulation of growth of tobacco by means of, B., 457.
 influence of, on tissue respiration, A., 982.
- Boron trifluoride, additive compounds of, with organic compounds, A., 1404.
 hydride, band spectrum of, A., 403, 996.
 electrolysis of ammonia solutions of, A., 1248.
- hydrides, A., 50, 287, 1248.
- monoxide, isotopes of, A., 279.
- trioxide, specific heat of, A., 1003.
- Boric acid, manufacture of, (P.), B., 840.
 spectrochemistry of glycerol solutions of, A., 676.
 dissociation of, A., 39.
 effect of, on optical properties of hydroxy-compounds, A., 163.
 action of, on alkali chlorides and nitrates, A., 181.
 stabilisation of buffers of, A., 799.
 phosphorescent products of, A., 696.
 compounds of, with diols, A., 911.
 detection of, with luminescent substances, A., 321.
 determination of, A., 812.
 by the alcohol flame reaction, A., 326, 587.
 separation and determination of alumina and, B., 841.
- Borides, crystal structure of, A., 414, 1218.
 refractory, preparation and properties of, A., 921.
- Boron organic compounds, aromatic, and their arylmercuric salts, A., 244.
- Boron tri-*p*-anisyl, tri-*tert*-butyl and their ammoniates, and tri-*sec*-propyl, A., 1280.
 triethylimine, A., 78.
- Bostrychia scorpioides*, dulcitol in, A., 1341.
- Brothodendrin, A., 536.
- Bottled goods, steaming of, under pressure, (P.), B., 364.
- Boundary state, A., 559.
- Boundary tension, determination of, by drop method, A., 162.
- Boxwood, analysis of, A., 1198.
- Bradycardia from deficiency of vitamin-B, A., 271.
- Brain, double refraction of extracts of, and its variation, A., 507.
 fatty acids of kephalin of, A., 112.
 fatty acids of protagon fraction of, A., 1321.
 blood-calcium in disease of, A., 1446.
 depressor substance in, A., 112.
 ether-insoluble lecithins in, A., 755.
 human, ergosterol in, A., 642.
 kephalin from, A., 249, 380.
 of ox, pig, and sheep, unsaturated fatty acids of, A., 249.
- Brakes, friction materials for, (P.), B., 571.
 hydraulic, fluid for, (P.), B., 522.
- Bran, detection of rice hulls and sawdust in, B., 219.
- Brandy, B., 133.
 wine, B., 412.
 detection of isopropyl alcohol in, B., 413.
- Brass, influence of tin on constitution of, B., 253.
 α - and β -transformations of, A., 556.
 hydrogen overvoltage and composition of, A., 570.
 cold-rolling of, (P.), B., 847.
 deposition of black copper oxide on, B., 116.
 prevention of dezincification of, B., 253.
 effect of arsenic on dezincification of, B., 845.
 chromium-plated, tarnishing of, B., 929.
 high-strength, failure of, B., 1014.
 scrap, treatment of, (P.), B., 1102.
 determination of zinc in, B., 117.
- α -Brass, cold-working and annealing of, B., 494.
- Brass tubes, internal stresses in, B., 887.
- Brassica oleracea*. See Brussels sprouts.
- Brassicæ*, finger-and-toe disease in, B., 268.
- Brassicidic acid, formation of, from erucic acid, by action of nitrous acid, A., 1272.
 parachor of, A., 149.
- Braunite, lattice structure of, A., 1002.
 action of heat on, A., 930.
- Braxilin, A., 361.
- Brazil nut oil, A., 1101.
- Brazing, alloy for, (P.), B., 164.
 with zinc-copper alloys, distillation phenomena in, B., 928.
- Bread, composition of, B., 1119.
 making of, (P.), B., 513.
 acidity in, B., 460.
 value of honey and sucrose in, B., 315.
 rôle of milk constituents in, B., 512.
 change of X-ray spectrum of starch in, B., 1069.
 dough-producing apparatus for, (P.), B., 135.
 and sterile packing, (P.), B., 564.
- relation between protein peptised and loaf volume of, B., 177.
- baking of, and baking powder therefor, (P.), B., 695.
 influence of method of moulding on loaf volume in, B., 738.
 effect of method of, on protein content and loaf volume, B., 177.
- separation of diastatic activity from "strength" in baking tests on, B., 1118.
- effect of overgrinding of flour on keeping quality of, B., 461.
- proteolysis in doughs for, B., 41.
- water-insoluble and soluble fractions of, B., 943.
- treatment of, before wrapping, (P.), B., 1073.
- test for ropiness in, B., 41.
 prepared with beer yeast, B., 413.
 baked from various kinds of flour, biological values of proteins of, A., 1451.
- German, phosphate content of, B., 413.
- leavened, making of, (P.), B., 88.
- rye, bleaching of flour with benzoyl peroxide for manufacture of, B., 1070.
- wholemeal, production of, (P.), B., 741.
 physiological action of, A., 648.
- detection of chloramine-T in, B., 739.
- detection of corncockle in, B., 219.
- determination of ash of, B., 461, 651.
- determination of mixtures of rye and wheat products in, B., 608.
- Bread-crust bomb from Tusnádfürdő, A., 594.
- Breath, exhalation of alcohol in, A., 649.
- Brewing, research methods in, B., 941.
 decarbonation of mashing liquor in, B., 607.
 extract differences at mash-tun taps in, B., 942.
 removal of carbonates from water for, (P.), B., 996.
 physical chemistry of proteins in relation to, B., 902.
 tannins in, B., 1024.
 separation of yeast from fermenting liquors in, (P.), B., 1118.
- Brewing liquors, biological significance of nitrates in, B., 562.
- Brewing pans, heating of, (P.), B., 650.
- Bricks, (P.), B., 66.
 manufacture of, (P.), B., 249, 885.
 apparatus for, (P.), B., 633.
 machines for, (P.), B., 678.
 use of oil fuel in, B., 296.
 treatment of slag for, (P.), B., 493.

- Bricks, kilns for firing of, (P.), B., 1141.
 burning of, and fuel therefor, (P.), B., 678.
 strength of, B., 760.
 durability and strength of bond between mortar and, B., 678.
 volume changes with water content of, B., 842.
 building, relation of Brinell hardness and transverse strength to compressive strength of, B., 65.
 concrete, water-proofing of, (P.), B., 249.
 frog, effect of slagging on flux content and porosity of, B., 633.
 refractory, (P.), B., 441.
 manufacture of, (P.), B., 1051.
 effect of slags on, B., 720.
 composite, (P.), B., 492.
 testing of, B., 248.
 determination of alumina and magnesia in, B., 440.
 of pro-Cambrian shale, vapour-glazing and colour-flashing of, B., 63.
 silica, refractory mortars for use in, (P.), B., 806.
 lime in, B., 396.
 lime-bonded effect of burning on structure and properties of, B., 296.
 tridymite, production of, B., 805.
 analysis of, B., 491.
 Brickwork, damp, chemical examination of, B., 1096.
 Bright's disease, nitrogen and sulphur metabolism in, A., 510.
 Brilliant cresyl blue, oxidation-reduction potential of, A., 1013.
 Brine, refrigerant evaporator for cooling, (P.), B., 372.
 recovery of dissolved substances in, (P.), B., 111.
 recovery of borax from, (P.), B., 200.
 recovery of iodine from, (P.), B., 440.
 recovery of salt and magnesium chloride from, (P.), B., 1092.
 manufacture of sodium chloride from, (P.), B., 200.
 treatment of, to prevent corrosion of iron and steel, (P.), B., 20.
 Briquettes, machines for manufacture of, (P.), B., 148.
 carbonised, production of, (P.), B., 470.
 coal, production of, (P.), B., 1035.
 without addition of tar, (P.), B., 1129.
 bituminous, petrography of, B., 281.
 fuel, (P.), B., 148*.
 manufacture of, (P.), B., 470, 871, 958, 1082.
 peat, manufacture of, (P.), B., 871.
 Briquetting, preparation of materials for, (P.), B., 1084.
 with smokeless pulp binders, B., 51.
 Brittleness, relation between plasticity, elasticity, toughness and, B., 949, 950.
 Broccoli, organic acids of, A., 884.
 Bromates and Bromides, See under Bromine.
 Bromination with potassium bromide-bromate mixtures, B., 324.
 analytical, errors in, A., 193.
 Bromine, atomic weight and isotopes of, A., 141, 1208.
 manufacture of, in France, B., 537.
 at Kali Ste.-Thérèse, B., 537.
 absorption spectrum of, A., 1344.
 arc spectrum of, A., 887.
 spark spectrum of, A., 992.
 ultra-violet absorption spectrum of, A., 1350.
 photochemical reaction of, with cyclohexane, A., 1251.
 with hydrogen, A., 806.
 photochemical oxidation with, A., 578.
 photochemical decomposition of ozone by, A., 1250.
 electric moments of, in organic molecules, A., 23.
 liquid, dielectric constant of, A., 285.
 equilibria in mixtures of chlorine and, A., 431.
 biological action of, A., 260.
 Hydrobromic acid, synthesis of, by α -particles, A., 1252.
 radiochemical decomposition and synthesis of, A., 806.
 emission spectrum of, A., 19.
 low-temperature explosions of mixtures of ozone and, A., 1240.
 Bromides, distribution of, in blood, A., 974.
 detection of, colorimetrically, A., 325.
 determination of, iodometrically, A., 811.
 in presence of other halogens, A., 325.
 in chlorides, B., 1009.
 determination of chlorides in, B., 971.
 Hypobromous acid, decomposition of, A., 437.
 Bromates, use of, in volumetric analysis, A., 925.
 detection of, in flour, B., 779.
 determination of, in presence of iodates and iodides, A., 55.
 Bromine organic compounds, pharmacologically active, A., 1452.
 Bromine determination :—
 determination of, in urine, A., 538.
 Bromo-iodometry, A., 811.
 Bronze, cupola melting of, B., 116.
 welding of, (P.), B., 28.
 Chinese, corrosion of, B., 444.
 See also Tin bronze.
 Bronze powder, production of metal grains for, (P.), B., 354.
 Brownian motion, A., 36.
 Brucidine, oxidation products of, A., 855.
 acids from dihydrobrucidine and, and their derivatives, A., 1433.
 Brucine, A., 750.
 molecular structure of, A., 371.
 ethiodide, A., 628.
 detection of, colorimetrically, A., 750.
 determination of nitrates by, A., 1257.
 Brushite. See Ardealite.
 Brussels sprouts, fat metabolism of leaves of, A., 1099.
 Bubble caps, (P.), B., 521.
 Bubble towers, (P.), B., 521.
 Buckwheat, nutritional physiology of, B., 857.
 influence of p_H on growth of, B., 175.
 toxic effects of iodine and nickel on, A., 537.
 anthocyanins in, A., 536.
 Buffers, boric acid, stabilisation of, by aeration, A., 799.
 Buffer mixtures, acid and alkaline, effect of, on carbohydrate metabolism and body temperature, A., 116.
 acetate-veronal, A., 990.
 phosphate, vapour pressure depressions of aqueous solutions of, A., 566.
 action of, with various cations, A., 565.
 Prideaux-Ward, A., 585.
 sodium phosphate-citric acid, A., 585.
 Buffer solutions, A., 910.
 determination of p_H of, with antimony-antimony oxide electrodes, A., 811.
 Buffer systems in plants, A., 272.
Bufo vulgaris, consumption of dextrose by central nervous system of, A., 1183.
Bufo vulgaris japonicus, iron content of, A., 861.
 Bufotenidine, and its picrate, A., 1310.
 Bufotenin, and its salts, A., 1310.
 Building blocks, manufacture of, (P.), B., 66.
 treatment of slag for, (P.), B., 493.
 Building materials, production of, (P.), B., 721, 1052, 1096.
 blocks for use as, (P.), B., 1052.
 coloured granules for use as, (P.), B., 885.
 slabs for use as, (P.), B., 1096.
 waterproof sheets for, (P.), B., 66.
 use of asphalt and bitumens as, B., 974.
 effect of, on paint films, B., 728.
 apparatus for testing corrosion- and erosion-resistance of, B., 974.
 weatherproofing and coloration of, (P.), B., 493.
 acid resisting, B., 909.
 brick, volume changes in, B., 1051.
 porous, manufacture of, (P.), B., 590, 634, 975.
 siliceous, strength of, B., 760.
 Bulbocapnine methyl ether, basic derivative of, by action of phloroglucinol, A., 1311.
Bulbus scillæ, detection of mucilage in, B., 653.
 Bullets, photography of flight of, A., 1014.
 Burettes, filling of, A., 330.
 adjustable drop control for, A., 330.
 for air-sensitive solutions, A., 705.
 for determination of unsaturated and aromatic hydrocarbons in oils, B., 53.
 micro-macro-, A., 815.
 sampling, A., 1264.
 Burners, (P.), B., 1002.
 and combined spray dryer, (P.), B., 614.
 production of hydrocarbon vapours for, (P.), B., 1039.
 fuel, (P.), B., 236, 751.
 thermostats for, (P.), B., 1127.
 liquid fuel, (P.), B., 11, 869, 912, 917, 1085.
 pulverised fuel, (P.), B., 104, 148, 384, 710, 833, 1085, 1129.
 for pulverised, liquid and gaseous fuel, (P.), B., 333.
 for gas, liquid fuel, etc., (P.), B., 104.
 hydrocarbon, wicks for, (P.), B., 56.

- Burners for combustion of liquid hydrocarbons, (P.), B., 384.
 oil, (P.), B., 916.
 heavy oil, (P.), B., 11.
 oil-fuel, (P.), B., 833.
 oxy-acetylene, (P.), B., 710.
 for pulverulent materials, (P.), B., 56, 579.
 for hot-blast stoves, (P.), B., 833.
- Butadiene, manufacture of, (P.), B., 666.
 and its homologues, manufacture of, (P.), B., 666.
 derivatives, addition of esters to, A., 1397.
 manufacture of oily polymerisation products of, (P.), B., 579.
- $\alpha\gamma$ -Butadiene, polymerisation of, (P.), B., 195.
 $\Delta\alpha\gamma$ -Butadiene, $\alpha\beta\gamma\delta$ -tetrachloro-, A., 598.
 Butadienes, polymerisation of, B., 475.
n-Butaldehyde dimethyl and diethyl acetals, A., 463.
n-Butane, density of, A., 292.
 Butane, α -amino- $\alpha\beta\gamma$ -trioximino-, and its nickel salt, A., 605.
 $\alpha\delta$ -diamino- $\alpha\beta\gamma\delta$ -tetraoximino-, A., 1274.
 $\beta\gamma$ -dibromo-, action of ammonium sulphite on, A., 196.
 $\alpha\alpha\beta\gamma\delta\delta$ -hexachloro-, A., 597.
 Butane series, halogeno-derivatives of, A., 597.
 Butane- β -carboxylic acid, $\alpha\gamma$ -dihydroxy-, A., 1279.
 cycloButane-1:1-dicarboxylic acid, 3-hydroxy-, and its barium salt, A., 621.
 Butane- γ -sulphonic acids, β -hydroxy-, isomeric, salts of, A., 196.
 Butanetetracarboxylic acids, and their ethyl esters, A., 603.
 cycloButanol series, syntheses in, A., 620.
 Butene. See Butylene.
 $\Delta\beta$ -Butenonitrile, preparation of, A., 195.
 Butenonitriles, A., 832.
 $\Delta\gamma$ -Butenyl alcohols, formation of, and their phenylurethane, A., 599.
 Butenylamines, and their derivatives, A., 470.
 9-Butenyl-10-anthrone, γ -9-dibromo-, and its derivatives, A., 1419.
 $\Delta\beta$ -Butenylidenecyclohexylamine, A., 343.
 2- $\Delta\gamma$ -Butenylquinoline, and its picrate, A., 364.
 γ -*n*-Butoxy-*n*-butyric acid, A., 710.
 γ -Butoxyephedrine, A., 350.
 β -*n*-Butoxyethoxyacetic acid, A., 198.
 β -*n*-Butoxyethylmalonic acid, ethyl ester, A., 710.
 α -*n*-Butoxyphenylarsinic acid, A., 1173.
 2-Butoxyquinoline-4-carboxylic acids, and their diethylaminoethyl esters, and their hydrochlorides, A., 1167.
 Butter, manufacture of, (P.), B., 134, 945, 1026.
 effect of heat on vitamin-A in, A., 1097.
 colouring matter for, (P.), B., 695, 780.
 flavour of, B., 272.
 cause of beet odour and taste in, B., 87, 651.
 colloid chemistry of, B., 42.
 growth of moulds in, B., 220.
 influence of pasteurisation on, B., 42.
 fat, glyceride structure of, A., 757.
 washing of, (P.), B., 169.
 effect of feeding with menhaden oil on composition of, A., 862.
 vitamin-A in, A., 988.
 determination of, B., 30.
 in ice-cream, B., 134.
 cacao. See under Cacao.
 Italian, detection of coconut oil in, B., 461.
 karité, A., 1199.
 rancid, properties of, B., 935.
 analysis of, B., 272, 860, 1105.
 detection of added fats in, B., 133.
 determination of dimethyl diketone in, B., 695.
 determination of p_H of, B., 1119.
- Buttermilk, fat losses in, B., 1153.
 watering of, B., 42.
- Butyl alcohol, manufacture of, from ethyl alcohol, (P.), B., 149.
 by fermentation, A., 877; B., 86; (P.), B., 87, 738.
 photochemical reaction of bromine on, A., 1133.
 electric moment of, A., 895.
 density of, at low temperature, A., 899.
 viscosity of, at low temperature, A., 899.
 activity coefficient and adsorption of, in aqueous solution, A., 566.
 equilibrium of, with methyl alcohol and water, A., 793.
 synthetic, purification of, (P.) B., 12.
- Butyl alcohol, γ -chloro-, A., 599.
n- and *iso*-Butyl alcohols, magneto-optical dispersion of, A., 24.
- tert*.-Butyl alcohol and chloride, electric moments of, A., 410.
 Butyl alcohols, determination of, in fermentation mixtures, B., 1117.
 Butyl chloride, determination of, in ethyl alcohol, B., 963.
 sulphite, A., 463.
tert.-Butyl chloride, reaction of, with naphthalene, A., 341.
 thionitrite, A., 820.
 α -Butyl α -glyceryl ether, and its diphenylcarbimide derivative, A., 62.
n-Butylacetoacetic acid, ethyl ester, decomposition of, by potassium hydroxide, A., 197.
sec.-Butylacetoacetic acid, ethyl methyl ester, A., 714.
 β -Butylacraldehyde, derivatives of, A., 1273.
 Butylallenes, A., 1147.
 Butylamine hydrogen sulphide, A., 1042.
 1-Butylaminobenzthiazoles, and 5-chloro-3-bromo-, and their derivatives, A., 969.
 2-*iso*-Butylamino-5-hydroxy-1:3:4-thiodiazine, and its derivatives, A., 635.
 1-*iso*-Butylamino-5-methylbenzthiazole, and its derivatives, A., 969.
p-*sec*.-Butylaminophenol, and its hydrochloride, A., 837.
 α -*n*-Butylaminophenylarsinic acid, and its nitroso-derivative, A., 1173.
 δ -Butylaminovaleric acid hydrochloride, A., 1306.
 d -*n*-*iso*-Butylamylcarbinol, and its hydrogen phthalate, A., 599.
 α -*iso*-Butylanisole, A., 1056.
 Butylarsines, dichloro-, A., 1435.
n-Butylbenzylmalonic acid, A., 1269.
tert.-Butylboric acid, A., 1280.
 l -*n*-Butylisobutylcarbinol, and its hydrogen phthalate, A., 599.
 α -Butylbutyric acid, β -amino-, and its acetyl derivative, derivatives of, A., 1419.
 d -*iso*-Butylcarbinols, molecular rotations of, A., 599.
 Butylcellobiosides, heptaacetates of, A., 73.
 Butylchloral hydrate, condensation of, with arylhydrazines, A., 722.
 α -Butylcrotonic acid, and β -amino-, ethyl ester, A., 1419.
 10-Butyl-5:10-dihydrophenarsazines, A., 1435.
 Butyldihydro-*n*- and *iso*-quinolines, A., 364.
iso-Butylene. See $\Delta\gamma$ -Butylene.
 $\Delta\alpha$ -Butylene, $\beta\gamma$ -dibromo-, A., 333.
di- and *tri*-bromo-, A., 1392.
 $\Delta\beta$ -Butylene, $\alpha\alpha\beta\gamma\delta\delta$ -hexachloro- and $\alpha\beta\gamma\delta$ -tetrachloro- $\alpha\delta$ -*d*-nitro-, A., 598.
 $\Delta\gamma$ -Butylene, polymerisation of, A., 194.
 Butylenes, reaction of hydrogen chloride with, A., 315.
 production of liquid hydrocarbons from, A., 460.
 Butylenes, hexabromo-, crystal structure of, A., 1219.
 chloro-, stereoisomeric pairs of, A., 195.
 $\Delta\alpha$ -Butylene- $\alpha\delta$ -dicarboxylic- γ -malonic acid, ethyl ester, A., 1037.
 $\alpha\gamma$ -Butylene glycol, manufacture of, (P.), B., 237, 797.
 $\beta\gamma$ -Butylene glycol, production of, by fermentation of carbohydrates, (P.), B., 41.
 occurrence and detection of, in wines and fruit wines, B., 412, 693.
 β -Butylhexaldehyde, β -hydroxy-, A., 461.
 β -Butylhexanol, phenylurethane of, A., 1269.
 α -*n*-Butylhexoic acid, derivatives of, A., 1269.
iso-Butylideneacetones, A., 466.
 Butylidenemalonic acid, ethyl ester, A., 935.
 α -*iso*-Butylmalonic acid, α -amino-, ethyl ester, and its derivatives, A., 338.
 3-*iso*-Butyl-4-methylcoumarin, 7-hydroxy-, and its acetyl derivative, A., 962.
 2-*n*-Butylperinaphth-1:3-diketohydrindene, 5-hydroxy-, A., 487.
n-Butyl- α -naphthol-orange, A., 344.
 4-Butylphenol, 2-amino-, and its acetyl derivative, and 2-nitro-, A., 1434.
n-Butylphenols, and their derivatives, A., 224.
 α -*n*-Butylphenoxyacetic acid, A., 224.
N-Butyl-2-piperidone, A., 1306.
 2-*n*-Butylpyridine-6-carboxylic acid, and its salts, A., 370.
 1-*n*-Butyl-2-pyridone, A., 1306.
 1-*n*-Butyl-2-pyridone, 5-iodo-, and its hydrochloride and 5-nitro-, A., 234.
N-Butylpyridonearsinic acids, A., 1315.
 5-*sec*.-Butylpyrimidine, 2:4:6-trichloro-, A., 742.
 1-*n*-Butylpyrrolidine, synthesis of, and its chloraurate, A., 361.
 2-Butylquinoline, preparation of, and its salts, A., 98.
 Butyl-*n*- and *iso*-quinolines, and their picrates, A., 364.

- n*-Butylsulphinic acid, derivatives of, A., 64.
 Butylsulphones, A., 1409.
n-Butylsulphonic acid, and its derivatives, A., 64.
p-Butylsulphonylphenylhydrazines, A., 1409.
 1-Butylcyclohexylbutane, 8-bromo-, 1-bromide, A., 373.
n-Butylthiosulphonic acid, butyl ester, A., 64.
sec-Butyltoluenes, derivatives of, A., 79.
 Butyltoluenesulphonic acids, barium salts, A., 79.
 Butyl-*m*-tolyl methyl ether, and its *d*-nitro-derivative, constitution of, A., 1152.
*iso*Butyranilide, *p*-bromo-, preparation of, A., 613.
 Butyric acid, occurrence, detection and determination of, in foods, B., 652.
 salts, electrolysis of, A., 464.
 β -chloropropyl ester, A., 62.
 o-phenylacetamidophenyl ester, A., 615.
 detection of, in sweet wines, B., 650.
 determination of, in admixture with acetic and propionic acids, A., 1395.
 in edible fats, B., 1017.
 Butyric acid, α -amino- β -*di*hydroxy-, and its lactone, A., 829.
 α -bromo-, hydrolysis of, A., 574.
 β -chloro- α -iodo-, A., 1391.
 β -hydroxy-, degradation of, in the animal organism, A., 115.
*iso*Butyric acid, glyceryl ester, A., 1269.
*iso*Butyric acid, α -amino-, preparation of, A., 830.
 mono- and *di*-amino-, derivatives of, A., 1436.
dl-*iso*Butyric acid, α -amino-, phenylcarbamido-derivative, A., 943.
 Butyric acids, β -hydroxy-, $\alpha\beta\gamma$ -trisubstituted derivatives, preparation of, A., 726.
 Butyrolin, action of yeast on, A., 1332.
 Butyrolactone, $\beta\gamma$ -*di*hydroxy-, preparation of, A., 1148.
 Butyrophenone, 2:4:6-*tri*hydroxy-, benzoylation of, and its derivatives, A., 963.
 Butyro- β -veratrylethylamide, γ -bromo-, A., 365.
 α -*iso*Butyrylamino*iso*butyric acid, α -amino-, acetyl derivative, A., 1436.
n-Butyrylcholine chloroplatinate, A., 943.
 Butyryl-5:10-dihydrophenarsazine, 10-chloro-, A., 1316.
 3-Butyryldiphenylamine-6'-arsinic acid, A., 1316.
 Butyrylmenthylamines, A., 229.
*iso*Butyrylmesitylene, α -bromo-, and its derivatives, and 4:6-*di*-bromo-, A., 199.
 β -(β -Butyryloxy)butyric acid, β' -hydroxy-, ethyl ester, A., 197.
 4-Butyrylresorcinol, and its *di*chloro-derivative, A., 217.

C.

- Cabbage, fertiliser experiments on, B., 312.
 etheral extracts of white leaves of, A., 776.
 function of hexuronic acid in respiration of leaves of, A., 533.
 lipoids from leaves of, A., 776.
 antiscorbutic fractions of, A., 1338.
 early, effect of superphosphate on, B., 557.
 Cables, electric, lead alloys for sheathings of, (P.), B., 548, 814*.
 lead-calcium alloy for sheaths for, (P.), B., 1058.
 insulation for, (P.), B., 70, 726.
 composition for cleaning of ends of, (P.), B., 893.
 submarine, paragguta for, B., 309.
 underground, detection of corrosion of, B., 762.
 Cacao, manuring of, B., 820.
 beans, catechin of, A., 535.
 extraction of fat from, (P.), B., 1146.
 fat and phosphatide in, B., 860.
 butter, occurrence of arachidic acid in, B., 850.
 fat in, B., 123.
 glycerides from, A., 1199.
 triglyceride from, A., 820.
 expressed and extracted, B., 934.
 solvent-extracted, detection of, by ultra-violet light, B., 209.
 analysis of, B., 1059.
 detection of foreign fats in, B., 449.
 products, recovery of alkaloids and cacao butter from, (P.), B., 317.
 determination of crude fibre in, B., 44.
 Cadavers, determination of thallium in, A., 56, 328.
 Cadmium, structure and properties of, B., 445.
 production of, (P.), B., 813.
 in Italy, B., 809.
 electrodeposition of, A., 571.
 electroplating with, for prevention of rust, B., 1014.
 cold-working of, B., 299.
 spectrum of, A., 404.
 arc and spark spectra of, A., 1344.
 high-frequency spectrum of, A., 1104.
 excitation of line spectrum of, A., 137, 406, 540.
 molecular spectrum of, A., 664, 888.
 resonance spectrum of, A., 7.
 critical potentials of spark spectrum of, A., 540.
 velocity of atoms of, reflected from rock salt, A., 14.
 fluorescence of vapour of, A., 780.
 polarisation of resonance radiation of, A., 1104.
 photo-electric properties of, A., 994.
 transport number of, in its amalgams, A., 685.
 energy of dissociation of, A., 1358.
 catalytic activity of, A., 176.
 coating of, (P.), B., 813.
 hot galvanising with zinc and, B., 445.
 as a rust preventive, B., 496.
 finishing of articles plated with, (P.), B., 1103.
 use of, for coating containers for foods, B., 695.
 electrodeposited, colouring of, B., 1143.
 vapour, toxicity of, A., 1454.
 poisoning. See under Poisoning.
 Cadmium alloys, binary, with transition elements, A., 418.
 with antimony, crystal structure of, A., 671.
 with copper, crystal structure of, A., 896.
 with magnesium, X-ray structure of, A., 157.
 electrical conductivity and thermal expansion of, A., 158.
 with silver, A., 556.
 electrodeposition of, B., 496.
 crystal structure of, A., 901.
 Cadmium chloride, crystal structure of, A., 414.
 halides, absorption spectra of, A., 1350.
 heats of formation of, A., 432.
 alkali halides, ebullioscopic studies of, A., 423.
 hydride, band spectrum of, A., 137.
 Zeeman effect in, A., 6.
 indate, structure of, A., 151.
 iodide, photo-electric effect for, A., 147, 409.
 dissociation of, in aqueous solution, A., 799.
 oxide, as standard for powder spectrum method, A., 1115.
 sulphate, activity coefficient and heat of transfer of, A., 912.
 determination of hydrolysis of solutions of, A., 910.
 ammoniate, A., 698.
 Cadmium organic compounds:—
 Cadmium tetrapyridine fluosilicate, A., 1381.
 Cadmium detection, determination, and separation:—
 detection of, A., 701.
 by means of 2:7-diaminofluorene, A., 1045.
 determination of, A., 453, 1025.
 colorimetrically, A., 701.
 in mill and smelter products, B., 25.
 in zinc ores, A., 1024.
 and its separation from copper, A., 813.
 separation of, from cadmium, A., 1025.
 from zinc, A., 327.
 Cadmium electrodes. See under Electrodes.
 Cadmium yellow, electrolytic production of, (P.), B., 169.
 Cæsálpinia tinctoria, production of, in Italy and its use as a tanning agent, B., 939.
 Cæsim, atomic weight of, A., 783.
 extraction of, from carnallite, A., 49.
 nuclear moment of, A., 888, 993, 1204.
 photo-electric properties of, A., 139.
 and its adsorption on salts, A., 8.
 photo-ionisation of vapour of, A., 9, 10, 138, 405, 1346.
 action of positive ions of, on hot nickel, A., 1348.
 recombination of electrons with ions of, A., 1348.
 recombination into the 1^2S state of, A., 540.
 Cæsim tetra-bromide and -iodide, A., 921.
 hypophosphite, A., 443.
 nitride, A., 50.
 oxide, pure, extraction of, from beryl, B., 438.
 cells. See under Cells, photo-electric.

Cæsium determination :—

- determination of, A., 1259.
- Caffeidide hydriodide**, A., 1308.
- Caffeidine**, salts of, A., 1308.
- Caffeine**, filtration of, from coffee infusions, (P.), B., 178.
 - solubility of, in presence of antipyrine, A., 159.
 - compound of, with salicylic acid, A., 496.
 - evaluation of drugs containing, B., 45.
 - detection of, by murexide reaction, A., 1169.
 - determination of, in "decaffeinated" coffee, B., 1153.
 - in infusions and extracts of coffee, B., 860.
 - in coffee, tea and maté, B., 609.
- isoapoCaffeine**, A., 852.
- Caffolides**, A., 853.
- Calciferol**, A., 881.
 - and its 3:5-dinitrobenzoate, A., 1464.
- Calcification**, relation of calcium-phosphorus ratio to, A., 384.
- Calcite**, Raman effect in, A., 668, 998.
 - polarisation in, A., 286.
 - from coal mines, A., 596.
- Calcium**, atomic weight of, from sylvine, A., 279.
 - allotropic transformation of, A., 416.
 - recovery of, from its ores, (P.), B., 1010.
 - vacuum spark spectrum of, A., 1103.
 - ionised, spectrum of, A., 780.
 - potential of, A., 686.
 - specific heat of, A., 293.
 - alloyability of beryllium with, B., 845.
 - effect of administration of, A., 973.
 - content of, in the body in relation to diet, A., 1326.
 - effect of fibre in diet on retention of, A., 258.
 - distribution of, in blood-serum, cerebrospinal fluid and aqueous humour, A., 508.
 - influence of, on diffusion of sugars through intestine, A., 765.
- Calcium alloys** with bismuth, A., 1118.
 - with lead, production of, electrolytically, (P.), B., 208.
 - with sodium, equilibrium of, A., 900.
- Calcium salts** as protective for amylase, A., 1189.
 - toxicity of, A., 870.
 - assimilation of, in relation to diet, A., 1451.
 - effect of intracerebral injection of, A., 386.
 - influence of diuretics on, A., 387.
 - in blood and urine, A., 1327.
 - coagulation of blood by, A., 1088.
 - solution of, in serum, compared with hydrotropic solutions, A., 506.
 - staining of, A., 643.
- Calcium aluminates**, A., 1370.
 - synthesis and hydration of, B., 884.
 - aluminate and silicates, A., 921.
 - arsenate, commercial, composition of, B., 487.
 - metaarsenite, A., 808.
 - borate, production of, (P.), B., 803.
 - bromide and chloride, hexahydrates, crystal structure of, A., 671.
 - carbide, manufacture of, (P.), B., 631.
 - use of, in syntheses with ethyl acetoacetate, A., 712.
 - Caro apparatus for testing of, B., 630.
 - analysis of, B., 245.
 - determination of acetylene in, B., 756.
- carbonate**, production of mixtures of ammonium nitrate and, (P.), B., 201.
 - deposition of, in tropical seas, A., 985, 1335.
 - thermal dissociation of, A., 800.
 - in carbon dioxide, A., 800.
 - solubility of, in water containing alkali chlorides, A., 557.
 - effect of electrolytes on activity of water towards, A., 1234.
 - reaction of, with magnesium salts in solution, A., 320.
 - hydrate, in sugar carbonatation, B., 510.
 - modified, in snail-shells, A., 596.
 - determination of, in lime marl, B., 536.
 - and bicarbonate, influence of temperature and salts on equilibrium between, B., 204.
 - See also Calcite.
- chloride**, powdered, manufacture of, (P.), B., 293.
 - separation of, from magnesium chloride, (P.), B., 539.
 - heat of dilution of, in alcoholic solution, A., 433.
 - vapour pressure of alcoholic solutions of, A., 566.
 - equilibrium of, with hexamethylenetetramine and water, A., 684.

- Calcium chloride**, effect of, on fermentation, A., 1091.
 - absorption and retention of phytin or, A., 1327.
- magnesium chloride**, manufacture of, (P.), B., 1093.
- chromate**, crystal structure of, A., 414.
- fluoride**, spectrum of, A., 1210.
 - effect of electrolytes on suspensions of, A., 1123.
 - sublimed, adsorption of iodine on, A., 902.
 - effect of, on calcium retention in pigs, A., 869.
- hydride**, band spectrum of, A., 780.
 - thermal dissociation of, A., 800.
 - reduction reactions with, B., 487.
- hydroxide**, production of, from quicklime, (P.), B., 1138.
- hypochlorite**, production of, (P.), B., 1093.
 - removal of calcium chloride from, (P.), B., 882.
 - neutral, drying and dehydration of, (P.), B., 1139.
- indate**, structure of, A., 151.
- iodide hexahydrate**, crystal structure of, A., 789.
- nitrate**, group rotation in, A., 1215.
 - fusion equilibrium of potassium nitrate with, A., 431.
 - equilibrium of, with water and potassium nitrate, A., 310.
 - with silver nitrate, A., 1128.
- double salts**, manufacture of, (P.), B., 489.
 - use of, in explosives, B., 1123.
- commercial**, fire risks in handling of, B., 670, 675.
- nitride**, heat of formation of, A., 801.
- oxide (lime)**, equilibrium of, with ferric oxide, A., 1010.
 - with potassium and silicon oxides, A., 1011.
 - slaking of, (P.), B., 538.
 - reversibility of reaction between sulphur dioxide and, A., 311.
 - compounds of ferric oxide and, A., 1373.
 - compounds in mixtures of kaolin and, B., 1141.
 - commercial, volumetric determination of basic constituents of, B., 674.
 - slaked, volumetric determination of basic constituents of, B., 674.
 - determination of, B., 536.
- phosphate**, constitution and citrate-solubility of, B., 756.
 - properties of, B., 629.
 - preparation of solutions of, B., 839.
 - equilibrium between ammonia, ammonium carbonate and, B., 156.
 - distillation of phosphorus from, B., 537.
 - action of carbonic acid under pressure on, A., 181.
 - as mineral supplement for dairy cows, B., 176.
 - determination of lead in, B., 1009.
- monohydrogen phosphate**, production of, (P.), B., 758.
 - recrystallisation of, A., 911.
 - decomposition of, by water, A., 1139.
 - solid, equilibrium of aqueous salt solutions with, A., 911.
- dihydrogen phosphate**, granular, production of, (P.), B., 757.
- phosphates**, production of, (P.), B., 61.
 - crude, dissolving of, (P.), B., 803.
- silicates**, hydrothermal synthesis of, A., 1020, 1380.
 - hydrated, A., 310.
- stannate**, mechanism of formation of, A., 318.
- stannite**, A., 320.
- sulphate**, production of, (P.), B., 1009.
 - anhydrous, production of, (P.), B., 1093.
 - in sea-water, A., 1225.
 - by-product, use of, for plaster, (P.), B., 201.
 - hydrates, A., 437, 807.
 - and sulphide, thermal decomposition of mixtures of, A., 50, 311.
 - See also Gypsum.
- sulphide**, preparation of, A., 1253.
 - phosphorescence of, A., 22, 893.
 - heat capacity of, at low temperatures, A., 552.
 - reactions of iron oxides with, A., 584.
- polysulphides**, A., 695.
- thioxystannite**, A., 321.
- Calcium organic compounds :—**
 - Calcium cyanamide**, formation of, A., 1249, 1369.
 - from calcium carbide, A., 807, 808.
 - pure, preparation of, A., 807.
 - production of, (P.), B., 61, 111, 349, 882, 1010.
 - conversion of, into cyanide, B., 839.
 - storage of, B., 670.
 - manuring with, on acid soils, B., 458.
 - commercial, determination of total nitrogen in, B., 717.
 - Calcium detection**, determination, and separation :—
 - detection of, in small quantities in magnesium salts, A., 812.

Calcium detection, determination, and separation:—

- determination of, A., 1342.
 gravimetrically, A., 1385.
 micro-chemically, A., 588, 1259.
 nephelometrically, A., 1259.
 as oxalate, A., 1259.
 with picrolonic acid, A., 1259.
 volumetrically, A., 1024.
 in blende, B., 544.
 in blood, A., 248.
 in blood-serum, A., 377, 641.
 in blood and tissues, A., 506.
 in feeding stuffs and cattle excreta, B., 652.
 in lead alloys, B., 254.
 in limestone, B., 245.
 in presence of magnesium, A., 56, 588.
 in serum, A., 859.
 in cane juices and syrups, B., 561.
 in urine, A., 1444.
 volumetrically, in drinking water, B., 92.
 and its separation from strontium, A., 186.
 determination of strontium in, spectro-analytically, A., 327.
 separation of, from magnesium, A., 701.
 Calcium electrodes. See under Electrodes.
 Calcium ions, calcium electrode for determination of, A., 330.
 Calcium sulfuratum solutum, preparation of, B., 587.
 Calcium wire, magnesium-covered, (P.), B., 121.
Calendula officinalis, saponins from, A., 1169.
 Calfskin, hydration of, B., 731.
 Caliche in Arizona, A., 459.
 lixiviation of, B., 60.
 saturated solution from, B., 60.
 Callicrein, A., 128, 397.
Calocarpum mammosum. See Sapote.
 Calorimeters for heat effects in liquefied gases, A., 1143.
 bomb, A., 191.
 Berthelot bomb, combustion of chlorine compounds in, A., 1262.
 gas, (P.), B., 527.
 micro-, measurement of heats of adsorption and of vaporisation by, A., 593.
 adiabatic, for determination of specific heats, A., 593.
 Calorimetry, adiabatic, A., 1386.
 at high temperatures, A., 1262.
 animal, A., 762.
Calotropis gigantea. See Madar juice.
 Calves, deficiencies in diet devoid of roughage for, A., 1451.
 dairy, supplements to milk diet for, B., 1025.
 Calycanthine, A., 855.
 Camels, constituents of flesh of, A., 1081.
 Camellia oil, solubility of, in ethyl alcohol, B., 500.
 in isopropyl alcohol, B., 550, 894.
 Camera, wave-speed, A., 1014.
 Camomile. See *Matricaria chamomilla*.
 Camphane-4-carboxylamide, 2-chloro-, A., 1300.
 π -apocamphane-7-carboxylic acid, identity of, with dihydro-teresanilic acid, A., 626.
d-Camphane-4-carboxylic acid, 2-hydroxy-, A., 1301.
 Camphanecarboxylic acids, 6-bromo- and 6-hydroxy-, and their methyl esters, A., 359.
dl-Camphane-1-nitrile, bromo-, A., 359.
 Camphene, compound of, with hydroferrocyanic acid, A., 736.
 Camphene, 4-amino-, and its hydrochloride and derivatives, A., 1300.
 Camphanecarboxylamide, and hydroxy-, and their derivatives, A., 1301.
d-Camphene-1-carboxylic acid, A., 358.
 Camphene-4-carboxylic acid, and chloro-, A., 1300.
cis- and *cis-trans*-Camphene hydrate-*meso*-carboxylic acids, A., 1161.
d-Camphene-1-nitrile, A., 359.
 Camphenilone, synthesis of, A., 849.
 Camphenilyl ethyl ketone, A., 848.
 Camphenilyl phenyl ketone, A., 848.
 Camphoeanaldehydic acid, derivatives of, A., 626.
 Campholenic acid, stereoisomeric derivatives of, A., 848.
 Camphor, A., 358, 1300.
 determination of molecular weight of, A., 796.
 formation of, from linalool, in presence of aluminium, A., 1299.
 latent heat of fusion of, A., 1003.
 cryoscopic constant, heat of fusion and heat capacity of, A., 1361.

Camphor, f. p. lowering for, A., 1011.

- from *Cinnamomum camphora* of New Zealand, B., 697.
 molecular weight determination in solution in, A., 30.
 betaines, A., 1300.
 condensation product of, with resoreinol, and its derivatives, A., 627.
 derivatives, phototropic and photochemical changes of, in solutions, A., 1138.
 2:4-dinitrophenylhydrazones, A., 937.
 effect of, on adrenaline output and sugar in blood, A., 764.
 action of, on frog's heart, A., 388.
 determination of small quantities of, A., 1318.
 separation of, from borneol, by formation of tribornyl borate, A., 492.
 Camphor, amino- and imino-, rotation and stereoisomerism of phenyl and iodophenyl derivatives of, A., 848.
 chloroamino-, acetyl derivative, A., 1300.
 hydroxy-derivatives, A., 1068.
 5-hydroxy-, oxidation of, A., 358.
pernitroso-, condensation of, with amines, A., 95.
 oximino-, condensation product of, with thiohydantoin, A., 495.
d-Camphor, fused, rotation of, A., 787.
d- and *l*-Camphor, pharmacology of, A., 1452.
l-Camphor, 4-amino- and 4-hydroxy-, and their derivatives, A., 1301.
dl-Camphor, 4-chloro-, and its derivatives, A., 1301.
 π -Camphor derivatives, A., 626.
 Camphor oil from *Cinnamomum camphora* of New Zealand, B., 697.
 Japanese, sesquiterpene and sesquiterpene alcohol from, B., 993.
 white, use of, in paints and varnishes, B., 851.
 2-Camphor-*o*-aminobenzoic acid, lead salt, A., 95.
 2-Camphor-*p*-aminobenzoic acid, A., 95.
 2-Camphoranesthesin, A., 95.
 Camphoranilic acids, disubstituted, rotatory powers of, A., 626.
 2-Camphor-*m*-anisidine, A., 95.
 Camphorcarboxylic acid, salts of, A., 626.
 silver salt, A., 1301.
l-Camphor-4-carboxylic acid, amide of, A., 1300.
rac-Camphorcarboxylic acid, A., 1161.
 Camphorcarboxylic acids, hydroxy-, stereoisomeric, and their acetates, A., 1068.
 Camphorcyanoaldehydes, and their derivatives, A., 358.
 Camphoreins, A., 359.
 Camphoric acids, physical identity of, A., 848.
 Camphoric anhydride, action of substituted aromatic amines on, A., 626.
 action of hydrazine hydrate on, A., 1301.
 Camphoric dihydrazide, A., 1301.
N-Camphorimide, *N*-amino-, and its picrate, A., 1301.
 Camphorimine derivatives, A., 1301.
 Camphorquinone, transformations of, A., 1068.
 diethylacetal, reactions of, A., 1068.
dl-Camphorquinone, 4-chloro-, A., 1301.
 Camphorsulphonic acid, and its salts, effect of neutral salts on rotation of, A., 24.
dl-Camphor-10-sulphonic acid, resolution of, A., 358.
 Camphordithiocarbonic acid, sodium aurous salt, and its hydrates, A., 736.
 Camphoryldimethylcarbathoxymethylammonium perchlorate and the corresponding betaine and its perchlorate, A., 1300.
 Camphoryldimethyl- β -hydroxyethylammonium hydroxide and salts, A., 1300.
 Camphoryldimethylvinylammonium salts, A., 1300.
N-Camphoryl-*N*-methylaminoacetic acid, barium salt and esters, and their hydrochlorides, A., 1300.
 Camphoryltrimethylammonium perchlorate, A., 1300.
d-Canadine, isolation of, from *Corydalis cava*, A., 855.
 Cancer, research in, A., 1083.
 mitogenetic radiation of, A., 1083.
 effect of metals on, A., 1324.
 p_H of blood in, A., 1446.
 glycolysis in blood in, A., 977.
 distribution of phosphorus in blood in, A., 864.
 hormones in, A., 1083.
 lactic acid in blood in, after irradiation treatment, A., 510.
 effect of iodoacetic acid on lactic acid production in, A., 976.
 protein fractions of puncture fluids in, A., 1180.
 action of serum on cells of, A., 1323, 1324.
 relation of vitamins to development of, A., 382.

- Cancer, action of anti-sera for, on tissue cultures, A., 1323.
tissue metabolism in, A., 1323.
extract for injections for, (P.), B., 136.
manufacture of therapeutic agents against, (P.), B., 947.
Fuch's reaction for, A., 1180.
mouse, respiration in, A., 1083.
effect of heavy metal salts on, A., 1461.
- Cannabinol, trinitro-, and its derivatives, A., 625.
Cannabis indica, chemical reactions of, A., 1342.
resin from, A., 625.
- Canned foods. See under Foods.
- Canned goods, conveyor for, (P.), B., 911.
processing plant for, (P.), B., 422.
steaming of, under pressure, (P.), B., 364.
- Cantharides, evaluation of, B., 514.
- Cantharidin, extraction of, from *Mylabris pustulata*, and preparation of its hydrazide, B., 993.
- Caoutchouc, A., 93, 194, 228, 492, 733, 734, 961, 1067.
solutions, cryoscopic measurements with, A., 93.
action of nitric oxide on, A., 93.
reduction of, with hydriodic acid, A., 228.
condensation products of, B., 819.
See also Rubber.
- isoCaoutchouc nitron, A., 93.
- Capillarity, A., 679.
"Neumann's triangle" in calculations on, A., 26.
- Capillary activity in aqueous solutions, A., 1007.
analysis. See under Analysis.
electrometers. See under Electrometers.
systems, A., 905, 1007, 1123; B., 1077.
- Capsaicin, determination of, colorimetrically, B., 611.
- Capsanthin, A., 131, 733.
esters of, A., 1066.
- Capsicum, tincture of, B., 274.
- Capsules made of cellulose esters, shrinkage of, and its prevention, (P.), B., 343.
- Caramel, production of, (P.), B., 737.
from molasses, B., 1024.
- Caraway oil, determination of carvone in, B., 416.
- Carbamatoundecic acid, κ -dithio-, A., 824.
- Carbamic acid, metallic salts, manufacture of, (P.), B., 62.
ammonium salt, (P.), B., 20, 538.
calcium salt, production of, (P.), B., 349.
heptadecyl ester, A., 77.
- Carbamic acid, nitrosodithio-, iron salts of, A., 1382.
- Carbamide (urea), structure of, A., 609.
in aqueous solution, A., 944.
enzymic formation of, from guanidine, A., 524.
synthesis of, A., 1374.
autoclave synthesis of, B., 11.
manufacture of, B., 487; (P.), B., 12, 57, 150*, 393.
heat of dilution of, in alcoholic solution, A., 433.
crystal structure of, A., 550.
equilibria of, with pyrocatechol and resorcinol, A., 567.
resinous condensation products of aldehydes and, (P.), B., 170.
condensation products of formaldehyde and, (P.), B., 262, 357, 687.
and its derivatives, condensation of, with formaldehyde, (P.), B., 213.
compounds of, with lead halides, A., 809.
chlorate and perchlorate, A., 339.
nitrate and oxalate, coloration of crystals of, A., 672.
derivatives producing hypoglycemia, A., 1043.
decomposition of, in soils, B., 82.
See also Urea.
- β -Carbamido- α -benzamido- β -2-furylpropionic acid, A., 232.
- Carbamidodiacetic acid, formation of, from hydantoin-3-acetic acid, A., 631.
identity of Fischer's glycylglycinecarboxylic acid with, A., 607.
- Carbamido-*N,N'*-di- ϕ -behenic acid, A., 76.
- Carbamidodimalonic acid, ethyl ester, and its hydrolysis, A., 471.
- Carbamido-*N,N'*-di- θ -nonoic acid, A., 76.
- Carbamidodisulphonic acid, salts of, A., 472.
- 3-Carbamido-4-hydroxyphenylarsinic acid, preparation of, A., 970.
- Carbamidopropylbenzene, iodo-, A., 832.
- Carbamidoquinoline, 2:3-thio-, A., 1170.
- Carbamidoquinolines, A., 1167.
- Carbamidosiloxen, A., 1034.
- Carbamidosulphonic acids, salts of, A., 472.
- 3-Carbamylmethylamino-4-benzyloxyphenylarsinic acid, A., 1314.
- 2-Carbamylmethylthiolbenziminazole-5-arsinic acid, A., 106.
- enolCarbazolacridonylaminomethylenecamphor, A., 1300.
- Carbazole, recovery of, (P.), B., 335.
manufacture of derivatives of, (P.), B., 336, 434.
formation of triphenylmethane dyes from, A., 632.
- Carbazoles, 2- and 3-hydroxy-, manufacture of, (P.), B., 237.
- Carbazole series, syntheses in, A., 1307.
- Carbazole-acridone dyes, manufacture of, (P.), B., 712.
- Carbazole-indophenol compounds, preparation of, (P.), B., 58*.
- Carbazole-sulphonic acids, manufacture of substitution products of, (P.), B., 711.
- 5-*N*-Carbazolyliminothiohydantoin, A., 495.
- Carbenes, elimination of, from fuel oil, (P.), B., 55.
- 4-Carbethoxyamino-3-hydroxyphenylarsinic acid, A., 241.
- 2-Carbethoxyaminophenol, 5-amino-, and its acetyl derivative, and 5-nitro-, A., 241.
- 2-Carbethoxyaminopyridine, 4-chloro- and 4-iodo-, A., 362.
- l*- α -Carbethoxybenzyl carbonate, A., 1291.
- dl*- α -Carbethoxybenzyl-*p*-tolylsulphone, A., 1291.
- α -Carbethoxycoumaric acids, A., 1162.
- α -Carbethoxydiglycylglycine, Fischer's ester, isomerisation of, A., 607.
- 7-Carbethoxy-9:10-dihydro- α' - β' -naphthapentindole, and 5-nitro-, A., 366.
- 3-Carbethoxy-4:3'-dimethyl-4'-carbomethoxyethylpyrromethene, 5-hydroxy-, and its derivatives, A., 968.
- 3-Carbethoxy-4:3'-dimethyl-4'-ethylpyrromethene, 5-hydroxy-, A., 1421.
- α -Carbethoxyheicosane- ϕ -carboxyl chloride, A., 76.
- γ -2-Carbethoxy-3-indolylbutyric acid, esters of, A., 363.
- 2-Carbethoxy-1-ketocyclopentyl-2-succinic acid, ethyl ester, A., 957.
- 2-Carbethoxy-7-methoxy- β -(3-indolyl)propionic acid, and its ethyl ester, A., 1306.
- 5-Carbethoxy-4-methyl-2-bromomethyl-3-ethylpyrrole, derivatives of, A., 968.
- 3-Carbethoxy-4-methyl-2-bromomethylpyrroles, 5-hydroxy-, A., 968.
- 5-Carbethoxy-4-methyl-2-bromomethylpyrrole-3-propionic acid, derivatives of, A., 968.
- Carbethoxy-4-methyl-2-chloromethylpyrrole, 5-hydroxy-, A., 1421.
- 3-Carbethoxy-4-methyl-2-chloromethylpyrroles, 5-hydroxy-, and their derivatives, A., 968.
- 5-Carbethoxy-4-methyl-3-chlorovinylpyrrole-2-carboxylic acid, A., 368.
- 5-Carbethoxy-4-methyl-3-(β -dicyanovinyl)pyrrole-2-carboxylic acid, A., 368.
- 4-Carbethoxymethyl-3:4-dihydro-6:7-benzocoumarin, 3:4-dioxyano-, A., 494.
- α -Carbethoxy- α -methyl-lævulic acid, and its derivatives, A., 1035.
- 5-Carbethoxy-4-methylpyrrole-2-carboxylic acid, 3-chloro-, A., 368.
- 3-(Carbethoxy-4-methylpyrrol)-(3-acetyl-2:4-dimethylpyrrol)-methene, 5-hydroxy-, A., 968.
- 3-(Carbethoxy-4-methylpyrrol)-(3-carbethoxy-2:4-dimethylpyrrol)-methene, 5-hydroxy-, A., 968.
- 3-(Carbethoxy-4-methylpyrrol)-(2:4-dimethyl-3-ethylpyrrol) methene, 5-hydroxy-, and its 3-carboxy-derivative, A., 968.
- 3-(Carbethoxy-4-methylpyrrol)-(2:4-dimethylpyrrol-3-carboxyethyl)-methene, 5-hydroxy-, and its derivatives, A., 968.
- 3-(Carbethoxy-4-methylpyrrol)-(2:4-dimethylpyrrol) methene, 5-hydroxy-, A., 968.
- O*-Carbethoxy- α -naphtholdisulphonyl chlorides, A., 1047.
- α -3-Carbethoxyphenylethylene, β -nitro-, A., 1077.
- Carbethoxyphthalimide, 3-nitro-, A., 830.
- γ -2-Carbethoxypiperidinobutyric acid, derivatives of, A., 499.
- 5- α -Carbethoxypropionyl-2:4-dimethylpyrrole, A., 1306.
- γ -(2-Carbethoxy-3-quinolyl)- $\alpha\gamma$ -diketobutyric acid, ethyl ester, A., 1310.
- 4'-Carbethoxy-4:5:3':5'-tetramethylpyrromethene, and 3-bromo-, hydrobromides, A., 967.
- Carbethoxythiocarbamic acids, ethyl esters, isomeric, A., 1280.
- 5-Carbethoxytrimethyl-3-bromovinylpyrromethenepropionic acids, hydrobromides of, A., 1431.
- 5-Carbethoxy-4:3':5'-trimethyl-4'-ethyl-3-3-bromovinylpyrromethene hydrobromide, A., 240.
- (5-Carbethoxy-4:3:5'-trimethyl-3-ethyl-4'-carbethoxyethyl)pyrromethene, A., 968.
- Carbides, manufacture of, (P.), B., 62.
crystal structure of, A., 414, 1218.
of high melting point, A., 170.

Carbides, refractory, preparation and properties of, A., 921.

Carbimides, $\alpha\beta$ -iodo-, reactions of, A., 832.

β -Carbimidononoic acid, ethyl ester, A., 76.

4-Carbimido-2-phenylmethylquinolines, A., 1429.

3-Carbimido-2-phenylquinoline, A., 1307.

Carbinols, acetylenic, A., 194.

aromatic, reduction of, A., 724, 1411.

phenylated, configurational relationships of, A., 333.

tertiary, use of sodium in preparation of, A., 1050.

Carbithioic acids, A., 219.

3-Carbobenzoyloxy-4-acetamidophenylstibinic acid, sodium salt, A., 855.

3-Carbobenzoyloxy-4-isobutyramidophenylstibinic acid, sodium salt, A., 855.

Carbocyanines, thio-, preparation of, A., 103.

Carbodibromophenylanilinoquinamides, A., 721.

Carbodinaphthylimides, action of diazomethane on, A., 1310.

Carbodi-*m*-tolylimide, A., 721.

Carbohydrates, A., 71, 826, 827, 1276.

structure of, A., 825.

and their optical rotatory power, A., 200, 939.

space-groups of, A., 1219.

historical chemistry of, A., 938.

photosynthesis of, A., 1251.

and formaldehyde from alkali hydrogen carbonates, A., 920.

solubility of dioxan in, A., 938.

reactions relating to, A., 267.

transformation reactions in, A., 199.

oxidation of, by air in presence of yellow phosphorus, A., 691.

saccharification of, (P.), B., 715, 967.

action of acetaldehyde on, A., 1038.

preparation of levulinic acid from, A., 1035.

and their derivatives, preparation of water-soluble benzoates of, A., 336.

manufacture of esters of, (P.), B., 714.

synthesis of derivatives of, with sublimed ferric chloride, A., 826.

methylene ethers of, A., 1401.

in biological processes, A., 1335.

biological oxidation of solutions of, A., 525.

activation of enzymic fission of, A., 985.

function of magnesium in enzymic degradation of, A., 1332.

course of, in the organism, A., 979.

tolerance to, at high altitudes, A., 646.

effect of vitamin deficiency on digestibility of, A., 515.

polymeric, manufacture of higher fatty acid esters of, (P.), B., 1089.

carbazole reaction for, A., 69.

determination of, in culture media, A., 1193.

Carbohydrazides, monosubstituted, derivatives of, A., 475.

Carbolic acid. See Phenol.

Carbolic powder, valuation of, B., 567.

Carboligase, A., 1457.

o-Carbomethoxybenzenesulphonic acid, methyl ester, A., 961.

β -Carbomethoxyaminononoic acid, A., 76.

3-Carbomethoxy-2-carboxyhydrazide, 5:7-dinitro-, A., 750.

2-Carbomethoxy-3:5-dimethylpyrrole-4-propionic acid, methyl ester, A., 1168.

N-Carbomethoxyformamide, A., 77.

2-Carbomethoxy-4-methyl-3-(β -dicyanovinyl)pyrrole-5-carboxylic acid, ethyl ester, A., 368.

4-Carbomethoxy-1:3:5:8-tetramethyl-6:7-dicarboxyethylporphin, and its methyl ester, A., 967.

Carbomethoxydithioacetic acid, silver salt and derivatives, A., 956.

Carbon, production of, by dissociation of gases, (P.), B., 286.

and hydrogen chloride, (P.), B., 431.

pure, (P.), B., 831.

isotope of, A., 15.

spectrum of, in the Schumann region, A., 1103.

dispersion of internal energy in, A., 403.

arc spectrum of, A., 5, 136.

vacuum spark spectrum of, A., 539.

ionised, spectrum of, A., 1103.

two-electron spectrum of, A., 779.

absorption of K_{α} line of, in air, A., 1346.

in gases, and its reflection from quartz, A., 888.

dipole moment measurements in stereochemistry of, A., 23.

electrical resistance of, A., 1360.

fusion of, A., 170.

adsorption of fatty acids by, A., 298.

Carbon, adsorption of binary organic liquid mixtures by, A., 1006.

adsorption of tetraethylammonium iodide by, A., 628.

equilibria of iron, sulphur, and, B., 807.

equilibria of iron, vanadium, and, B., 807, 808.

mechanism of combustion of, at low pressures, A., 321.

effect of sodium carbonate on gasification of, B., 466.

reaction between oxygen and, A., 678.

formation of cyanic acid, by oxidation of, A., 339.

reduction of iron oxides by, A., 584.

chains, use of tetramethylene dibromide in synthetic formation of, A., 621.

rings, case of formation of, A., 1407.

5-membered, reactivity of substituents in, A., 354.

mixed with metallic oxides, decomposition of water vapour on, A., 804.

for electrodes, treatment of, (P.), B., 287.

active, structure of, A., 421.

manufacture of, (P.), B., 148*.

by impregnation, B., 870.

together with gases rich in hydrogen, (P.), B., 1129.

regeneration of, B., 230.

vapour-pressure isotherms and submicroscopic structure of, A., 794.

influence of particle size of, on adsorption, A., 794.

adsorption of acetic acid by, B., 459.

adsorption of methylene blue by, A., 678.

adsorption of sugar solutions by, B., 84.

treatment of, to absorb water vapour, (P.), B., 1129.

purification of water with, B., 225, 226.

decomposition of hydrogen peroxide in presence of, A., 803.

granular, (P.), B., 378.

determination of hydrogen and oxygen in, A., 325.

adsorbent, manufacture of, (P.), B., 431.

apparatus for separation and recovery of vapours with, (P.), B., 521.

reactivation of, (P.), B., 144, 287.

and decolorising, production of, (P.), B., 526.

amorphous, structure of, A., 151.

manufacture of, (P.), B., 1083.

adsorption of hydrogen on, A., 1006.

colloidal, A., 796.

decolorising, influence of composition of solution on efficacy of, B., 1125.

dry, manufacture of, B., 526.

finely-divided, production of, (P.), B., 1129.

incandescent, diffraction of X-rays by, A., 1002.

medicinal, absorptive power of, B., 696.

Carbon compounds, catalytic oxidation of, (P.), B., 1036.

heteropolar, A., 350, 487, 955.

long-chain, alternating series of, A., 290.

Carbon tetrabromide, molecular size of, A., 1357.

interatomic distances in, A., 790.

thermal decomposition of, A., 915.

tetrachloride, formation of, from its elements, A., 321.

infra-red absorption spectrum of, A., 20.

Raman spectrum of, A., 1353.

X-ray scattering of, A., 26.

adsorption of, by activated charcoal, A., 160, 902.

heat of adsorption of, by charcoal, A., 558.

effect of, on metals, B., 206.

corrosion of iron by, A., 438.

extinction of benzene-air explosions with, B., 188.

poisoning. See under Poisoning.

tetrafluoride, production of, and its boiling point, A., 52.

suboxide, catalytic hydrogenation of, A., 1247.

monoxide, formation of, by oxidation of sugars, A., 336.

production of hydrogen and, B., 325; (P.), B., 432.

behaviour of catalyst in filters for, B., 368.

separation of, from its mixtures with hydrogen, (P.), B., 1036.

storage of, B., 438, 1048.

band spectrum of, A., 1343.

Stark effect in, A., 1205.

ultra-violet spectrum of, A., 1350.

heat of adsorption of, on chromium oxide and zinc oxide catalysts, A., 904.

heat of combustion of, A., 433, 1236.

viscosity of, A., 32.

adsorption and activation of, on palladium, A., 1366.

equilibrium of, with hydrogen and nitrogen, A., 1370.

ignition of mixtures of oxygen and, A., 44.

- Carbon monoxide**, ignition of dried mixtures of oxygen and, on silica, A., 688.
inflammation and detonation of mixtures of oxygen and, A., 436.
flame propagation in mixtures of oxygen and, A., 1014.
catalytic action of hydrogen on flames of, A., 575.
effect of diluents on cathodic combustion of mixtures of, with oxygen and with hydrogen, A., 44.
oxidation of, in air, A., 1371.
in the electric discharge, A., 919.
in mixtures with air in presence of metallic oxides, A., 696.
by steam, A., 307.
by dissociated water vapour, A., 321.
catalytic oxidation of, A., 317.
combination of oxygen with, at mixed oxide catalysts, A., 576.
catalytic decomposition of, A., 1376.
decomposition of, on iron and its oxides, A., 692.
reduction of, by bacteria, A., 1095.
catalytic reduction of, A., 439, 1018, 1376.
reduction of manganese oxides by, A., 568.
reduction of zinc oxide by, A., 51.
reaction of ammonia with, A., 176.
conversion of, by air or steam into hydrogen and its mixtures with nitrogen, B., 326.
production of acetic acid from methyl alcohol and, (P.), B., 579.
manufacture of methyl alcohol from, (P.), B., 12.
poisoning. See under Poisoning.
pharmacology of mixtures of nitrogen oxides and, A., 260.
detection of, (P.), B., 349.
in air, (P.), B., 744.
detection and determination of, (P.), B., 489.
determination of, B., 230.
influence of hydrogen on, with the Dräger apparatus, A., 452.
by burning with oxygen, A., 926.
by catalytic reduction, B., 523.
by means of silver oxide, A., 926.
volumetrically, A., 812.
in air mixtures, A., 1258.
produced from paints, B., 1061.
dioxide, formation of, sensitised by irradiated chlorine, A., 1137.
production of, (P.), B., 112.
at low temperatures, (P.), B., 540.
generator for, A., 706.
economics of recovery of, B., 630.
infra-red absorption spectrum of, A., 1111.
Raman effect in, A., 668, 1111.
retarded luminescence in, A., 1212.
influence of electric discharge on mixtures of methane, steam and, B., 186.
vapour pressure and conductivity of aqueous solutions of, A., 1234.
critical constants of mixtures of oxygen and, A., 156.
liquefaction and storage of, (P.), B., 247.
liquid, manufacture of, (P.), B., 294.
solid, production of, B., 717, 882, 972; (P.), B., 294, 489, 758, 1140.
apparatus for, B., 630, 1141.
manufacture of cakes of, (P.), B., 676.
applications of, A., 1389.
use of, for refrigeration, B., 19.
effect of, on transportation diseases in fruit, B., 1120.
dry, manufacture of, (P.), B., 804.
density of, A., 675.
viscosity of, A., 1117.
adsorption of, by activated charcoal, A., 1120.
by manganese dioxide, A., 298.
by potassium and sodium hydroxides, A., 916.
from gases, (P.), B., 294.
velocity of sound in, A., 553.
 p_H of solutions of, A., 321.
solubility of, in fused tellurium, A., 419.
influence of steam on combustion of, A., 436.
reduction of, to monoxide, (P.), B., 540.
reaction of, with hydrogen at surface of hot metal filaments, A., 576.
catalysts for reaction between hydrogen and, A., 176.
action of aqueous solutions of, under pressure, on alkaline-earth salts, A., 181.
- Carbon dioxide**, removal of, from air with active charcoal, B., 839.
separation of, from gas mixtures, (P.), B., 998.
poisoning. See under Poisoning.
determination of, A., 538, 700, 1024.
colorimetrically, A., 1142.
in air, A., 1384, 1385.
in baking powder, B., 41, 512.
volumetrically, in carbonates, B., 293.
in beer, B., 40.
in sea-water, A., 186.
in soil carbonates, B., 1066.
oxides, energy losses of electrons in, A., 142.
catalytic hydrogenation of, (P.), B., 148.
manufacture of oxygenated organic compounds from hydrogen and, (P.), B., 194.
Carbonic acid, photochemical conversion of, A., 1250.
influence of, on conductometric titration of acids and alkalis, A., 1256.
snow, apparatus for compression of, (P.), B., 588.
Carbonic acids, thio-, esters, tautomerism and desmotropy of, A., 964.
Carbonates, determination of, potentiometrically, A., 812.
in soils, A., 186; B., 81.
Carbon disulphide, formation of, from hydrogen sulphide and coke, B., 51.
manufacture of, (P.), B., 202.
production of, (P.), B., 1140.
apparatus for, (P.), B., 21.
recovery of, (P.), B., 247.
from gas mixtures, (P.), B., 709.
from residual gases in manufacture, (P.), B., 294.
absorption spectrum of, A., 996.
flame spectrum of, A., 996.
dielectric constant of, A., 1354.
liquid, modifications of, A., 896.
change of density of, with temperature, A., 1222.
mixtures of acetone, water, and, A., 1365.
adsorption of, on powdered glass and silver, A., 419.
catalytic decomposition of, by hydrogen, A., 1376.
by steam, A., 576.
combustion of, in oxygen, A., 45.
oxidation of, in air, A., 1371.
reduction of, A., 934.
bactericidal properties of, B., 1118.
detection of, A., 638, 1078.
- Carbon determination** :-
determination of, microchemically, A., 374, 638, 971.
by Pregl's method, A., 107.
by ter Meulen-Heslinga method, A., 638.
ultra-microchemically, A., 971.
elimination of sulphur in, by direct combustion, A., 303.
decomposition flask for, A., 1258.
apparatus for, in biological fluids, A., 778.
in sewage and industrial wastes, B., 655.
in sewage and sewage effluents, B., 996.
in soils, B., 898.
in high-sulphur steels, B., 203.
- Carbon black**, manufacture of, (P.), B., 102, 286, 431, 619, 1083, 1129.
apparatus for, (P.), B., 470.
by the flame-pressure process, B., 705.
from gaseous hydrocarbons, (P.), B., 914.
from oil-refinery residues, (P.), B., 330.
from propane, B., 98.
purification of, (P.), B., 431.
properties of, B., 51.
influence of physical properties of, on its tinting strength, B., 817.
adsorption by, B., 705.
relation between, and its effect on vulcanisation, B., 35.
flame of, B., 373.
effect of, on fluidity of printing ink, B., 851.
on insulating oils, B., 469.
determination of, in vulcanised rubber, B., 1108.
- Carbon tubes** in Cottrell units, B., 122.
- Carbonaceous materials**, production of, (P.), B., 190.
cleaning of, (P.), B., 377.
treatment of, (P.), B., 675.
heat treatment of, (P.), B., 329.
for production of oils, (P.), B., 55.

- Carbonaceous materials, activation of, by means of gases, (P.), B., 287.
- carbonisation of, (P.), B., 526.
- apparatus for carbonisation and distillation of, (P.), B., 830.
- combustion of, (P.), B., 285.
- apparatus for, (P.), B., 708.
- combustion and gasification of, (P.), B., 662.
- distillation of, (P.), B., 430, 470.
- apparatus for, (P.), B., 378.
- and cracking of oils therefrom, (P.), B., 664.
- retorts for destructive distillation of, (P.), B., 958.
- low-temperature distillation of, (P.), B., 285.
- apparatus for determination of fractionating temperatures of, (P.), B., 144.
- hydrogenation of, (P.), B., 526, 794.
- destructive hydrogenation of, (P.), B., 102, 144, 190, 286, 330, 378, 471, 709, 794.
- catalysts for, (P.), B., 709.
- reduction of, (P.), B., 619.
- products from, (P.), B., 1130.
- manufacture of liquid products from, by destructive hydrogenation, (P.), B., 53.
- activated, manufacture of, (P.), B., 9.
- liquid, catalytic hydrogenation of, (P.), B., 526, 872.
- pulverulent, low-temperature distillation of, (P.), B., 102.
- solid, distillation of, (P.), B., 662, 1129.
- apparatus for, (P.), B., 830.
- retort for, (P.), B., 1129.
- separation of oil from, (P.), B., 190.
- Carbonatotetramminecobaltic salts. See under Cobalt bases.
- Carbonisation, (P.), B., 11*.
- apparatus for, (P.), B., 148*, 430, 470, 793, 957, 1082.
- charging of, (P.), B., 751.
- producers for, B., 1127.
- in vertical retorts, B., 372, 1129.
- of fibrous materials, (P.), B., 486.
- of solid vegetation, (P.), B., 378.
- low-temperature, (P.), B., 430.
- apparatus for, (P.), B., 285.
- rotary kilns for, (P.), B., 1077.
- rotary retorts for, (P.), B., 1000.
- of fuels, apparatus for, (P.), B., 102.
- high-low-temperature, B., 828.
- Carbonyl bromide, kinetics and photochemistry of, A., 1250.
- oxime of, A., 199.
- chloride (*phosgene*), photochemical formation of, A., 1018, 1137.
- photochemical decomposition of, by ultra-violet light, A., 578.
- thermal decomposition of, A., 321, 326.
- molecular compounds of, with hydroxyazo-compounds, A., 613.
- poisoning. See under Poisoning.
- determination of, A., 700.
- compounds, reaction of, with phenylhydrazine, A., 721.
- use of 2:4-dinitrophenylhydrazine as reagent for, A., 937.
- hydroxy-, A., 843, 962, 963, 1161, 1303.
- groups, photochemistry of, A., 1138.
- determination of, in organic compounds, A., 1149.
- sulphide, structure of, at liquid air temperature, A., 789.
- infra-red absorption spectrum of, A., 1352.
- Carbonyl- α -amino- β -naphthol-*p*-aminoanil, and its benzylidene derivative, A., 614.
- Carbonyl- α -amino- β -naphthol-*p*-benzeneazoanil, A., 614.
- Carborundum, rectifying action of crystals of, A., 1355.
- decomposition of, A., 446.
- cubic, crystal structure of, A., 549.
- α -Carboxyacetophenone nitrophenylhydrazones, A., 1169.
- α -Carboxy- γ -acetyl- β -phenylbutyric acid, methyl ester, semicarbazone of, A., 1056.
- 5- α -Carboxyanilo-1-*p*-nitrophenyl-3-methyl-4:5-dihydro-1:2:4-triazole, A., 496.
- 2-Carboxyanthraquinone-1-thioglycollic acid, manufacture of conversion products of, (P.), B., 918.
- α -Carboxyazo-dyes, containing copper, manufacture of, (P.), B., 151.
- m*-Carboxybenzenesulphonchloroacetamide, A., 124.
- m*-Carboxybenzenesulphonylglycine, A., 124.
- m*-Carboxybenzenesulphonyl-*dl*-leucylglycine, A., 124.
- p*-(2-Carboxybenzoyl)benzenesulphonic acids, *p*-4-amino-, and *p*-4-nitro-, A., 623.
- 2- α -Carboxybenzoyldi-*p*-tolyl sulphide, and its derivatives, A., 96.
- α -Carboxy- γ -benzoyl- β -phenylbutyric acid, constitution of, and its methyl ester, semicarbazone of, A., 1056.
- 3-Carboxybenzylarylamines, 4-hydroxy-, manufacture of, (P.); B., 711.
- α -Carboxycamphocean- β -acrylic acid, and its methyl ethyl ester, A., 626.
- α -Carboxycamphocean- β -propionic acid, A., 626.
- Carboxydiahydroapoucinide, and its perchlorate, A., 970.
- α - β -Carboxyethylbenzoylformic acid, A., 1055.
- 2-Carboxyethyl-4:4:5:5-tetraphenyltrimethylene 1:3-disulphide, A., 1419.
- 2-Carboxyhexahydrohydrindene-2-acetic acids, and their derivatives, A., 729.
- Carboxyl group, hydrogenation of, catalytically, A., 1268, 1269.
- determination of, microchemically, A., 504.
- 5-Carboxy-2-methoxystyrene, α , β -dichloro-, A., 1054.
- β -Carboxymethylamino- α -hydroxy- β -phenylpropionic acid, and its salts and derivatives, A., 100.
- Carboxymethyldiphenylacetic acid, methyl ester, A., 955.
- 1-Carboxymethyl-5-di(phenylthio)arsono-2-pyridone, A., 1316.
- 1-Carboxy-4-methylcyclohexane-1-acetic acids, isomeric, and their derivatives, A., 1055.
- 5-Carboxy-2-methylmandelic acid, 4-hydroxy-, and its barium salt and acetyl derivative, A., 1054.
- 1-Carboxymethyl-2-naphthoxyacetic acid, A., 724.
- 1-Carboxy-3-methylcyclopentane-1-acetic acid, and its silver salt and derivatives, A., 843.
- anhydride of, A., 1053.
- 4-Carboxymethylphenylundecic acid, ethyl ester, and its thallium salt and derivatives, A., 1290.
- 1-Carboxymethyl-2-pyridone, 3:5-dibromo-, A., 1316.
- Carboxymethyl-2-pyridonearsonic acids, and their derivatives, and 3-bromo-, A., 1315.
- 2-Carboxymethylthiolanthraquinone-1-carboxylamide, and its derivatives, A., 748.
- 2-Carboxymethylthiolbenzimidazole-5-arsinic acid, A., 106.
- 4-Carboxymethylthiol-2-*p*-dimethylaminostyryl-5-methylbenzothiazole 2-methosulphate, A., 1076.
- 4-Carboxymethylthiol-1:5-dimethylbenzthiazole, and its thiazolethioindigo derivative, A., 1075.
- 5-Carboxymethylthiol-2-keto-6-methylbenzodihydrothiazine, and its thiazinethioindigo derivative, and thiazinethionaphthen derivative and its *p*-dimethylaminoanil, A., 1075.
- 4-Carboxymethylthiol-2-*p*-methoxystyryl-5-methylbenzthiazole 2-ethiodide, A., 1076.
- Carboxyapoucinide, and its salts and acetyl derivative, A., 855.
- α -Carboxyphenoltraiodosulphonophthalein, A., 221.
- Carboxyphenylazohomophthalimides, A., 721.
- N*-Carboxyphenyl-2:5-dimethylpyrrole-3-carboxylic acids, and their salts, A., 362, 1306.
- N*- α -Carboxyphenyl-2:5-dimethylpyrrole-3:4-dicarboxylic acid, and its salts, A., 1306.
- α - α -Carboxyphenylethyl methyl ketone, α -hydroxy-, derivatives of, A., 484.
- α -Carboxyphenylmethylsulphone, derivatives of, A., 961.
- α -(α -Carboxyphenyl)propionic acid, α -hydroxy-, lactone of, A., 484.
- 5-Carboxy- α -tolylacetic acid, 4-hydroxy-, and its barium salt, A., 1054.
- 5-Carboxy-4:3':5'-trimethyl-3-bromovinylpyrromethene-4'-propionic acid hydrobromide, A., 1431.
- 5-Carboxy-4:3':5'-trimethyl-4'-ethyl-3- β -carboxyethylpyrromethene hydrobromide, A., 1421.
- (5-Carboxy-4:4':5'-trimethyl-3-ethyl-3'-carboxyethyl)pyrromethene, 5-bromo-, hydrobromide, A., 968.
- 5-Carboxy-4:3':5'-trimethyl-4'-ethylpyrromethene, 3-bromo-, hydrobromide, A., 101.
- 5-Carboxy-4:3':5'-trimethyl-3-ethylpyrromethene-4'-propionic acid hydrobromide, A., 101.
- 5-Carboxy-4:3':5'-trimethylpyrromethene-3-propionic acid hydrobromide, A., 101.
- Carbylamines, A., 614.
- Carcinogenesis in relation to fluorescence, A., 252.
- Carcinoma. See Cancer.
- Cardboard, manufacture of, (P.), B., 968.
- Carene, A., 848.
- Carnallite, production of, (P.), B., 803.
- extraction of rubidium and caesium from, A., 49.
- determination of magnesium chloride in, B., 802.
- Carnosine in *Selachii* and *Teleostei*, A., 860.

- Carnoy's fluid as fixative in block staining, A., 755.
- Caro's acid, determination of, by potentiometric titration, A., 1023.
- volumetrically, in presence of persulphuric acid and hydrogen peroxide, A., 326.
- Carotene, A., 491.
- absorption spectra of, A., 1110.
- isomerisation and fractionation of, A., 733.
- separation of, into its components, A., 959.
- preparation of colloidal solutions of, A., 846.
- ozonisation of, A., 491.
- fate of, in the organism, A., 1196.
- haematopoietic power of, A., 982.
- relation of growth-factor to, A., 1097.
- and vitamin-A, A., 398, 528, 529, 880, 988, 1097.
- from lettuce, A., 776.
- α -Carotene, constitution of, A., 1066.
- from palm oil, A., 1421.
- β -Carotene, constitution of, A., 1299.
- α - and β -Carotenes, and their derivatives, A., 846, 959, 960, 1421.
- growth-promoting power of, A., 1097.
- Carotenoids, A., 491.
- formation of, A., 1340.
- growth-promoting action of, A., 128.
- in fruit and vegetables, A., 885.
- Carpinus duinensis*, tanning with extracts of, B., 36.
- Carrots, pectins of, A., 1110.
- phosphatides of, A., 1199.
- effect of storage and canning on vitamin content of, B., 415.
- detection of, in marmalade, B., 43.
- Carstanjen's compound, production of, B., 273.
- alkaline oxidation of, B., 416.
- Cartridges, blasting, (P.), B., 225, 947.
- heating compositions for, (P.), B., 566, 744.
- Carvacrol β -chloroallyl ether, A., 952.
- Carvone, oxidation products of, and their derivatives, A., 1299.
- 4-*p*-tolylthiosemicarbazone, A., 486.
- determination of, in caraway and dill oils, B., 416.
- d*-Carvone, fused, rotation of, A., 787.
- Caryophyllene, degradation derivatives of, A., 735.
- Caryophyllenic acid, and its derivatives, A., 735.
- Case-hardening, composition for, (P.), B., 1101.
- Casein, molecular weight of, A., 855.
- production of iridescence in masses of, (P.), B., 79.
- separation of, from milk, B., 316.
- gels, dielectric properties of, A., 1125.
- sols, scattering of light in, A., 797.
- plastic compounds from, (P.), B., 310.
- disintegration of, by acetamide, A., 373.
- acid, properties of, B., 1119.
- determination of, in milk, B., 413.
- Caseinates, production of, (P.), B., 88.
- calcium, effect of preheating on dispersity of, in skim milk, A., 798.
- Caseinogen, solubility of, in sodium chloride and hydroxide, A., 33.
- swelling of, in lactic acid, B., 740.
- acid or alkaline hydrolysis of, A., 503.
- decomposition of, by coli-protease, A., 263.
- degradation products of, by action of glycerol, A., 1436.
- formation of norvaline from, A., 245.
- proteins in, A., 862.
- action of papain activated by hydrocyanic acid on, A., 392.
- action of proteinase on, A., 321.
- influence of, on hyperthyroidism, A., 253.
- biological value of, A., 256.
- effect of heat on, A., 761.
- as vitamin-A-potent, A., 772.
- for testing vitamins, A., 772.
- autoclaved, nutritive value of, A., 868.
- "Caseosan," sensitivity to poisons after treatment with, A., 121.
- Cashew nut-shell oil, extraction of, (P.), B., 596.
- treatment of, (P.), B., 642*.
- composition of, for coatings, etc., (P.), B., 307.
- Cassiterite, flotation of, (P.), B., 932.
- electrolytic reduction of, (P.), B., 164.
- analysis of, B., 802.
- Castings, manufacture of cores for, (P.), B., 814.
- Castor oil, purification of, B., 210.
- thickening of, (P.), B., 728.
- increase in viscosity of, under pressure, B., 500.
- Castor oil, destructive distillation of, and products therefrom, (P.), B., 1062.
- detection of ageing of, by capillary analysis, B., 894.
- causes of increase in acidity of, B., 210.
- splitting of, B., 683.
- oxidation of, with permanganate, B., 258.
- production of lubricants from, (P.), B., 307.
- manufacture of soap from, (P.), B., 259.
- soluble in mineral oil, manufacture of, (P.), B., 935.
- reactions of, B., 551.
- detection of, in "Abrasinol," B., 169.
- determination of hydroxyl content of, A., 1035.
- Catalase, apparatus for measuring activity of, in tissues, A., 389.
- activity of, of iron compounds, A., 439.
- active group of, A., 519.
- comparison of action of, with that of ultra-violet light, A., 519.
- inactivation of, A., 1188.
- and hydrogen acceptors, A., 261.
- effect of, on pneumococcus cultures, A., 526.
- effect of physical factors on, in blood, A., 641.
- blood, action of alkali on, A., 973.
- in blood and organs, effect of irradiation on, A., 872.
- liver, active group of, A., 123.
- in milk, B., 41.
- of thrombocytes, A., 858.
- determination of, A., 652.
- in human blood, A., 519.
- Catalysis and Raman spectra, A., 1211.
- deformation of molecules in, A., 339.
- acid and salts effects in, A., 1374.
- preparation of gels for, (P.), B., 157.
- by heavy metal ions, A., 917.
- in organic chemistry, A., 1034.
- at surfaces, A., 1375.
- in three-carbon tautomerism, A., 438.
- acid-base, A., 438.
- adsorption, A., 318, 576, 918.
- and promoter action, A., 317.
- quantum mechanics of, A., 576.
- contact, topochemistry of, A., 919, 1007.
- heterogeneous, A., 35, 918.
- determination of course of, by resistance to current of metallic catalysts, A., 804.
- hydrogenation, active centres in, A., 1246.
- Catalysts, manufacture of, (P.), B., 925.
- carriers for, (P.), B., 112, 439.
- reactivation of, (P.), B., 62.
- for photosynthesis, A., 1138, 1379.
- of high mechanical strength, (P.), B., 539.
- production of briquettes of, (P.), B., 183.
- for reduction of coal, etc., (P.), B., 9.
- acid, action of, on ketones, A., 438.
- active adsorbent, (P.), B., 112.
- for ammonia synthesis, photo-electric properties of, A., 317.
- copper-cobalt-magnesium oxide, promotion of action of, A., 1376.
- hydrogenation, A., 46, 439, 1017; B., 526.
- copper-chromium oxide, A., 803.
- iron-copper, influence of alkalis on, A., 439.
- metallic, (P.), B., 165*.
- precious metal, manufacture of, (P.), B., 548.
- metal oxide, adsorptive, manufacture of, (P.), B., 539.
- mixed, activity of, A., 1247, 1248.
- molybdenum mixed, for synthesis of ammonia, A., 1247.
- organic, A., 495.
- oxide, hydrogenation with, A., 1376.
- palladium, A., 1057.
- vanadium, uses of, B., 1008.
- zinc oxide-chromium oxide, adsorption of hydrogen by, A., 1226.
- Catalytic apparatus, (P.), B., 614.
- coefficients, determination of, from isocatalytic data, A., 575.
- converters, (P.), B., 371.
- hydrogenation, A., 439, 1366, 1376.
- at high temperatures and pressures, B., 870.
- in presence of nickel, B., 550.
- with oxide catalyst, (P.), B., 12.
- with sodium hydride, A., 1135.
- competitive, A., 919.
- destructive, of carbonaceous materials, (P.), B., 286.

- Catalytic hydrogenation and dehydrogenation of organic compounds**, (P.), B., 333.
 oxidation, by complex metallic salts, action of light on, A., 1251.
 reactions, catalysed by acids and bases, temperature coefficient of, A., 1375.
 consecutive, dependence of, on temperature, A., 803.
 gaseous, (P.), B., 425, 426.
 exothermic, (P.), B., 182.
 with gas mixtures at high pressures, A., 318.
 between solids, A., 318.
- Cataphoresis** in rotating electric fields, A., 36.
 of suspended particles, A., 1232.
 influence of size and shape in mobility in, A., 429.
- Catechin**, tannin, condensation of, A., 493.
- d-Catechin**, oxidation of, catalytically, by aminochlorodiethylenediamine-cobaltic bromide, A., 1162.
- Catechins** from kola nuts, A., 96.
 stereoisomeric, A., 738.
- Cathepsin**, activation of, A., 124.
 proteolytic action of, A., 521.
- Cathodes**, sputtering of, A., 329.
 in mercury vapour, A., 1206.
 thermal theory of disintegration of, A., 405.
 for manufacture of per-salts by anodic oxidation, (P.), B., 122.
 barium-nickel alloy, electron emission of, A., 10.
 electron-emitting, (P.), B., 815.
 iron, diffusion of hydrogen through, A., 1012.
 mercury arc, potential and ionisation at, A., 780.
 heat balance at, A., 780.
 dropping mercury, polarographic studies with, A., 178, 451, 686, 914, 1025, 1238, 1261.
 oxide, emission of photo-electrons from, A., 1112.
 shot effect of emission from, A., 11.
 photoelectric, manufacture of, (P.), B., 594.
 thermionic, (P.), B., 69.
 for electric vacuum tube devices, (P.), B., 257.
- Cats**, p_H of alimentary tract of, A., 641.
- Cattle**, toxicity of sodium chlorate to, B., 269.
 dairy, nutrient requirements for, B., 734.
 range, cottonseed meal as supplemental feed for, B., 272.
- Cattle grubs**. See *Hypoderma*.
- Cauliflowers**, premature heading of, in relation to chemical composition of the plant, B., 691.
- Cedar**, Taiwanian. See *Taiwania cryptomerioides*.
- Cedar wood**, resistance of paints, etc., applied to, B., 33.
- Cedrela toona**, essential oil from wood of, B., 697.
- Cedrene**, formation of, from cedrenene, A., 1068.
- Cedrenene**, and its polymeride, and dibromide, and its transformation into cedrene, A., 1068.
- Ceiba pentandra**. See Kapok.
- Celery blight**, control of, B., 175.
- Celiac disease**, metabolism in, A., 1446.
- Cell or Cells**, electrochemical, (P.), B., 305, 981, 1104.
 determination of constants of, A., 1012.
 electrodes for, (P.), B., 848.
 electrolyte for, (P.), B., 1016.
 prevention of loss of electrolyte from, (P.), B., 892.
 vessels for, (P.), B., 767.
 for production of chlorine and caustic soda, B., 486.
 aluminium, rectifying action of, A., 17.
 cadmium-lead chloride, A., 312.
 concentration, effect of breadth of junction on potential of, A., 434.
 conductivity, A., 433.
 dry, (P.), B., 305, 848.
 self-discharge of, B., 497.
 sealing of, (P.), B., 1017.
 galvanic, (P.), B., 766.
 Haber-Klemensiewicz, use of, for hydrogen-ion determination, B., 311.
 high-resistance, measurement of potential of, A., 686.
 hydrogen electrode, for p_H measurement, A., 703.
 Leclanché, A., 1014.
 output of, B., 166.
 current-yielding process in, A., 1238.
 liquid, with diaphragm, changes of p_H in, A., 680.
 liquid-liquid, potential of, A., 1013.
 metallic isothermal, A., 1371.
 primary, (P.), B., 304.
 reduction, containing alkali chlorites, A., 173.
- Cell or Cells**, electrochemical, silicon, potential of, A., 1237.
 Weston standard, hysteresis in, A., 1129.
 effect of pressure on potential of, A., 569.
- Cell or Cells**, micro-electrophoresis, determination of fall in potential in, A., 190.
- Cell or Cells**, photoelectric, A., 9; B., 166; (P.), B., 122, 304, 498, 549, 594, 767, 816, 849, 892, 1105, 1145.
 internal coating for, (P.), B., 1059.
 electrodes for, (P.), B., 30, 1016, 1059.
 filling for, (P.), B., 594.
 gas filling for, (P.), B., 1059.
 influence of water in, A., 999.
 in chemical technology, B., 29.
 alkali-metal, Einstein's equation for, A., 10.
 formation of photographic images on cathodes of, B., 566.
 barium, variation of photo-electric properties of, A., 785.
 caesium oxide, A., 1137.
 infra-red sensitivity of, A., 10.
 copper oxide, spectral sensitivity of, A., 893, 1112.
 temperature and emission of, A., 278.
 copper-copper oxide, A., 999.
 photo-electrons in, A., 9.
 temperature coefficient of, A., 9.
 gas filled, (P.), B., 683, 766.
 accuracy of, A., 999.
 ionisation in, A., 1105.
 alkali, photo-current and light intensity for, A., 893.
 infra-red sensitive, A., 704; (P.), B., 304.
 Kerr, (P.), B., 498.
 nitrobenzene "Kerr," physics of, A., 1220.
 lithium, A., 9.
 potassium, infra-red inhibition of emission from, A., 1347.
 effect of nitrogen and its oxides on, A., 278.
 selenium, (P.), B., 209.
 as colorimeters, A., 431.
 graphite electrodes for, (P.), B., 122.
 silver, formation of photo-electrons by, A., 893.
 with silver-silver bromide electrodes, A., 785.
 sodium, spectral response curves for, A., 1354.
 ultra-violet sensitive, (P.), B., 892.
 application of, to colorimetry, A., 1263.
- Cell or Cells**, physiological, biological action of short wave-length rays on, A., 261.
 permeability of, A., 862.
 exchange of ions and penetration of, A., 129.
 isoelectric point of, A., 380.
 agglutination of suspensions of, A., 379.
 kinetics of reactions in, A., 1182.
 chemical processes during division of, A., 115.
 metabolism of, A., 1084.
 fats in, A., 389.
 living, structure and activity of, A., 384.
 action of substances on, A., 649.
 accumulation of strong electrolytes in, A., 982.
 catalysis by methylene blue in, A., 108.
 protein substances of, A., 380.
 determination of oxygen consumption of, A., 537.
- "Cella" filters**. See *Filters*.
- Cellobial heptaacetate**, 2-hydroxy-, dichloride of, A., 467.
- Cellobial**, hydroxy-, tetraacetate, osazone of, A., 939.
- Cellobiosan**, A., 605.
- Cellobiose derivatives**, synthesis of, A., 1399.
- α -**Cellobiosides**, preparation of, A., 826.
- 6-p-Cellobiosidoglucose**, synthesis of derivatives of, and 1-bromo-, and 1-chloro-, deca-acetates, A., 1040.
- Cellobiosone acetates**, crystalline, A., 467.
- 2-Cellobioxanthraquinone-9-imine**, imonium salt of, and its sesquihydrate, A., 940.
- "Cellodin" paper**, photochemical effect on, A., 180.
- Cellohexaose**, and its acetate, A., 716.
- Cellophane**, swelling of, in sodium hydroxide solution, B., 340.
- Cellobetraose**, derivatives of, A., 716.
- Cellobiose**, and its derivatives, A., 716.
- Celluloid**, A., 167.
 waste, utilisation of, (P.), B., 754.
- Cellulose**, A., 74, 469, 605, 716, 827, 828.
 constitution of, A., 1040.
 structure of, with the Spierer lens, A., 532.
 equivalent weight of, A., 827.
 determination of molecular weight, in glacial acetic acid, A., 716.

- Cellulose, molecular size of, A., 202.
 manufacture of, (P.), B., 532, 625.
 digesters for, (P.), B., 153.
 with chlorine, B., 581, 753.
 from annual plants, (P.), B., 479.
 from bagasse, B., 478.
 from cottonseed hulls, (P.), B., 879.
 from cotton wastes, etc., (P.), B., 625.
 from fibrous vegetable material, (P.), B., 1043.
 from vegetable matter, (P.), B., 879.
 extraction apparatus for, B., 909.
 purification of, A., 469.
 apparatus for, (P.), B., 180.
 extraction of formic acid from residues from, (P.), B., 344.
 rotary dewatering sieves for, (P.), B., 16.
 electrokinetic potential of, A., 1232.
 potential at interfaces of, A., 435.
 surface conductance at interface of water and, A., 1229.
 thermal properties of, and its derivatives, A., 913.
 viscosity of solutions of, in cuprammonium hydroxide solutions, B., 1042.
 adsorption of ions by, A., 794.
 imbibition by, A., 426.
 hygroscopic moisture of, B., 836, 1005.
 equilibrium of, with sodium hydroxide and water, A., 1128.
 solubility of, in caustic soda, B., 478.
 solutions, of known viscosity, production of, (P.), B., 597.
 in cuprammonium hydroxide and sodium hydroxide, A., 311.
 in copper oxide-ethylenediamine and -ammonia solutions, A., 203.
 preparation of, in phosphoric acid, (P.), B., 837.
 crystal structure of, A., 152.
 sols, anisotropy in, A., 1368.
 gelatinisation of, (P.), B., 16.
 swelling of, and its affinity relations with aqueous solutions, B., 835, 920.
 in perchloric acid, A., 167.
 in thiocyanates, A., 306.
 and its acetate, effect of swelling in lithium thiocyanate solutions on absorption spectra of, A., 898.
 action of acids on, A., 202.
 action of organic acids on, B., 673.
 action of alkali on, B., 107, 478.
 determination of alkali consumption of, B., 754.
 action of caustic soda on, B., 670.
 action of formaldehyde on, A., 717.
 action of Grignard reagents on, A., 1278.
 behaviour of, with bisulphite and with sulphurous acid solution, B., 478.
 action of sodium on, in liquid ammonia, A., 1041.
 acetolysis and methylation of, A., 941.
 acetylation of, A., 1041 ; B., 1087 ; (P.), B., 108, 533.
 distillation products of, A., 337.
 treatment of, to facilitate esterification, (P.), B., 153.
 behaviour of zinc chloride in esterification of, A., 1401.
 hydrolysis of, A., 716.
 hydrolysis number of, B., 754.
 nitration of, A., 717 ; (P.), B., 877, 1135.
 with nitrogen tetroxide, B., 107.
 with nitric and phosphoric acids, A., 203.
 saccharification of, with sulphuric acid, B., 941.
 and its derivatives, treatment of masses of, with sulphonic acids, (P.), B., 16.
 production of mouldable composition containing, (P.), B., 968.
 production of filaments resembling wool from, (P.), B., 878.
 treatment of fabrics with, (P.), B., 244.
 manufacture of sheets, etc., of, (P.), B., 10.
 fermentation of, at high temperature, A., 525.
 bacterial fermentation of, A., 265.
 micro-organism fermenting, A., 655.
 decomposition of, in soils, B., 312.
 determination of, B., 478.
- Cellulose, alkali, B., 390.
 composition of, A., 426.
 X-ray structure of, A., 790.
 formation of, A., 941.
 determination of, B., 437.
 bamboo, B., 1087.
 cotton, preparation of standard samples of, B., 798.
 adsorption of water vapour by, A., 678.
- Cellulose, edible, A., 1341.
 native, X-ray diffraction of, A., 1360.
 highly nitrated, B., 532.
 oxidised and unoxidised, action of acetic-sulphuric acid mixtures on, A., 1041.
 potato, raw and cooked, crude fibre from, A., 1341.
 soda- and sulphate-, manufacture of, (P.), B., 799.
 sulphate-, cooking of, B., 625.
 deposition of minerals during evaporation of "black liquors" from, B., 1138.
 sulphite-, from pinewood, B., 753, 1004.
 cooking of, (P.), B., 968.
 production of waste liquor rich in organic matter in, (P.), B., 921.
 production of vanillin from waste liquors from, B., 1132.
 detection of, B., 670.
 detection of extract of, B., 173.
 synthetic, formation of, from dextrose by action of *Acetobacter xylinum*, A., 1401.
 wood, treatment of, (P.), B., 109.
- Cellulose articles, desulphurisation of, (P.), B., 197*.
 fabrics. See under Fabrics.
 fibres, X-ray diagram of change in structure of, A., 1217.
 immunisation of, (P.), B., 674.
 treatment of, to vary dyeing properties, (P.), B., 485.
 formation of crystalline carbohydrate from, A., 827.
 with high α -cellulose content, (P.), B., 388.
 manufacture of felted product from, (P.), B., 922.
 natural and artificial, treatment of, with alkali, (P.), B., 801.
 films, drying apparatus for, (P.), B., 389, 1137.
 treatment of, for use in photography, (P.), B., 367.
 materials, manufacture of, (P.), B., 627.
 production and treatment of, (P.), B., 59, 153, 197.
 electrical drying of, (P.), B., 837.
 treatment of, (P.), B., 715.
 determination of solubility number of, B., 1042.
 recovery of by-products in digestion of, (P.), B., 341.
 delustring of, (P.), B., 584.
 esterification of, (P.), B., 672.
 with vapours of lower fatty acids, (P.), B., 837.
 products for impregnation and preservation of, (P.), B., 347.
 saccharification of, (P.), B., 649, 877.
 formation of sugars from, (P.), B., 411 ; (P.), B., 412.
 containing organic derivatives, treatment of, (P.), B., 17.
 for coating floors, etc., (P.), B., 728.
 artificial, manufacture of, (P.), B., 107, 342.
 low-lustre, manufacture of, (P.), B., 438.
 rubberised, manufacture of, (P.), B., 801.
 membranes, containing proteins, production of, A., 167.
 preparations, relationship between viscosity and molecular weight of, A., 828.
 products, manufacture of, (P.), B., 671.
 pulp, production of, (P.), B., 479, 533, 583, 878.
 refining of, (P.), B., 837.
 alkaline, refining of, (P.), B., 389.
 sheets, treatment of, (P.), B., 242.
 threads, regenerated, treatment of, (P.), B., 1136.
- Cellulose acetate, B., 581.
 osmotic pressure and molecular weight of, A., 35.
 molecular volume of, A., 24.
 manufacture of, (P.), B., 533, 582, 754, 877.
 apparatus for, (P.), B., 968.
 from wood cellulose, B., 1134.
 in the United States, B., 620.
 acetic acid recovery in, B., 437 ; (P.), B., 1135.
 production and ripening of, B., 1087.
 viscosity of solutions of, A., 905.
 increasing solubility of, (P.), B., 799.
 solutions, spray-drying of, (P.), B., 261.
 precipitation of, (P.), B., 108.
 dispersion of, in liquid ammonia, A., 562.
 films, structure of, A., 548.
 manufacture of, (P.), B., 672, 1089.
 velocity of swelling of, B., 479.
 influence of plasticiser on, B., 479.
 softeners for, B., 1043.
 effect of neutral salts on hydrolysis of, in acetic acid solutions, A., 918.
 commercial, preparation of, B., 340.

Cellulose acetate, manufacture of coating compositions containing, (P.), B., 1147.
 treatment of textiles containing, (P.), B., 244.
 preparation of threads of, in the laboratory, B., 625.
 soluble in acetone, A., 469.
 compositions, of low inflammability, (P.), B., 388.
 film-forming, (P.), B., 597.
 plastic, (P.), B., 643.
 detection of perchloric acid in, B., 1134.
 acetate and nitrate, peptisation and coagulation of, B., 479.
 acetates, manufacture of, (P.), B., 714.
 conditions of viscosity of, A., 828.
 altering of solubility of, (P.), B., 1006.
 comparison of, and of artificial silks therefrom, B., 1088.
 partially hydrolysed, production of, (P.), B., 154*.
 saponified, formation and solubility of, A., 1278.
 analysis of, B., 876.
 acetates and nitrates, constitution of, A., 27.
 butyrate, A., 606.
 butyrates, preparation of, (P.), B., 799.
 compounds, manufacture of threads from, (P.), B., 153.
 derivatives, X-ray structure of, A., 790, 1219.
 manufacture of, (P.), B., 153, 343, 480, 626, 672, 754, 1005, 1043.
 purification of, (P.), B., 480.
 decolorisation of, (P.), B., 877.
 structure and viscosity of, in organic solvents, A., 1008, 1124, 1231.
 viscosity of solutions of, A., 1123.
 fractionation of, (P.), B., 1135.
 state of solution of, B., 1087.
 treatment of, (P.), B., 582, 672.
 for moulding, etc., (P.), B., 1135.
 treatment of materials containing, (P.), B., 485, 486, 923.
 precipitation and treatment of, (P.), B., 1135.
 dry-spinning of, (P.), B., 342, 480.
 softener for, (P.), B., 480.
 solvents for, (P.), B., 108, 921.
 solubility and physical strength of, B., 436.
 preparation of aqueous emulsions of, (P.), B., 837.
 action of water on, A., 1008.
 compounds of proteins with, A., 537.
 manufacture of artificial threads from, (P.), B., 1043.
 manufacture of bodies of, containing bubbles, (P.), B., 242.
 manufacture of compositions containing, (P.), B., 128, 405, 597, 685.
 relustring of fibres of, (P.), B., 838.
 production of filaments, etc. from, (P.), B., 242, 481.
 production of hollow filaments from, (P.), B., 481, 878.
 manufacture of lustrous filaments from, (P.), B., 1044.
 softening of filaments or yarns of, (P.), B., 802.
 tinting and lubricating of filaments or yarns of, (P.), B., 838.
 apparatus for manufacture of films or webs from, (P.), B., 532, 1090.
 manufacture of artificial films, filaments, threads, etc. from, (P.), B., 799.
 manufacture of films, ribbons, etc. from, (P.), B., 1044.
 fireproofing of materials containing, (P.), B., 1136.
 production of plastic masses from, (P.), B., 128.
 manufacture of plastic materials containing, (P.), B., 936.
 as coating compositions, (P.), B., 357.
 coating of rubber with, (P.), B., 263.
 for coating boards, etc., (P.), B., 534.
 organic, manufacture of, (P.), B., 626.
 alkyl and aralkyl, manufacture of, (P.), B., 671.
 esters, manufacture of, (P.), B., 108, 343, 479, 480, 714, 921, 968, 1005, 1006, 1089.
 manufacture and treatment of, (P.), B., 671.
 purification of, (P.), B., 1089.
 viscosity of, B., 479, 966.
 effect of temperature on viscosity of solutions of, A., 301, 302.
 production of solutions of, (P.), B., 480.
 containing insoluble pigments, (P.), B., 1062.
 precipitation of, (P.), B., 626.
 saponification of, (P.), B., 17.
 thermo-elastic effect in films of, A., 422.
 production of compounds of, (P.), B., 108.
 compositions, (P.), B., 405.
 for photographic films, (P.), B., 108.
 manufacture of artificial fibres and films from, (P.), B., 714.

Cellulose esters, manufacture of filaments, etc. of, (P.), B., 1044.
 manufacture of films of, (P.), B., 482.
 manufacture of materials containing, (P.), B., 837.
 manufacture of sheet materials containing, (P.), B., 968.
 coloration of materials of, (P.), B., 534.
 production of effects on materials of, (P.), B., 486.
 with fatty acids, production of, (P.), B., 16, 197.
 acid values of, B., 876.
 mixed, manufacture of, B., 154*, 242, 626, 877, 968.
 organic, production of, (P.), B., 480.
 soluble, manufacture of, (P.), B., 671.
 esters and ethers, manufacture of, (P.), B., 343.
 pigmentation of, (P.), B., 877.
 production of ice-colours on, (P.), B., 801.
 production of matt surfaces on, (P.), B., 534.
 manufacture of articles from, (P.), B., 1044.
 compositions from, (P.), B., 1135.
 manufacture of artificial materials from, (P.), B., 153.
 manufacture of sheet materials from, (P.), B., 1045.
 production of weighted materials of, (P.), B., 198.
 delustring of materials of, (P.), B., 486.
 apparatus for evaporation in manufacture of papers and films from, (P.), B., 583.
 manufacture of artificial threads, filaments, etc., from, (P.), B., 921.
 treatment of artificial threads made from, (P.), B., 878.
 discharge effects on materials containing, (P.), B., 292.
 ether nitrates, manufacture of, (P.), B., 672.
 ethers, B., 798.
 manufacture of, (P.), B., 480.
 compositions, (P.), B., 16.
 manufacture of solutions and plastic compositions from, (P.), B., 643.
 aralkyl, manufacture of, (P.), B., 1089.
 basic, manufacture of, (P.), B., 108.
 mixed, manufacture of, (P.), B., 672.
 viscous, lessening of viscosity of, (P.), B., 388.
 formate, B., 876.
 industrial utilisation of, B., 1087.
 furoate, A., 849.
 hydrate, coating of articles made from, (P.), B., 799.
 varnishing of webs of, (P.), B., 1047.
 materials, treatment of, (P.), B., 1089.
 saccharification of, (P.), B., 1006.
 methylene ether, A., 1401.
 nitrate (*nitro-cellulose*), constitution of, A., 1041.
 structure of, A., 290, 416; B., 92.
 X-ray structure of, A., 672.
 preparation of, A., 606.
 manufacture of, B., 368; (P.), B., 672, 799, 837, 877, 1006.
 from wood pulp, (P.), B., 46.
 of high density, (P.), B., 1074.
 storage of, B., 1074.
 physical and chemical nature of, B., 197.
 measurement of particle size of, A., 1008.
 effect of water content of, on its calorimetrically measured heat of explosion, B., 1156.
 viscosity of, B., 479.
 reduction of, (P.), B., 16.
 viscosity of solutions of, in mixed solvents, B., 966.
 lessening of, (P.), B., 404, 1107.
 acid adsorption and stability of, A., 420.
 solvents for, B., 33; (P.), B., 16, 1106.
 and coating composition, (P.), B., 127, 837.
 use of pine oil as, for lacquers, B., 876.
 distribution of solvent through powder of, B., 994.
 solubility of, B., 436.
 in alcohols, A., 793.
 affinity of, for gelatinising agents, B., 670.
 swelling function of gelatinising agents for, A., 167.
 cataphoresis in solutions of, B., 107.
 mixtures of resins with solutions of, B., 404.
 equilibria of nitroglycerin, water, and, B., 995.
 chemical properties of, in relation to its use in lacquers, B., 876.
 determination of chemical stability of, B., 907.
 apparatus for digestion of, (P.), B., 180.
 velocity of decomposition of, A., 1016.
 decomposition products of, at 135° C. in inert gas, B., 995.
 acetylation of, (P.), B., 877.

- Cellulose nitrate**, degradation of denitrated cellulose of, B., 907.
 films, structure of, A., 548.
 production of, (P.), B., 672.
 stability test for, B., 1043.
 containing camphor, ratio of deformation of, under static stresses, B., 1042.
 manufacture of films, sheets, etc. from, (P.), B., 481.
 filter cloth from, B., 106.
 gelatinisation of nitroglycerin by, B., 995.
 manufacture of solutions or compositions of, (P.), B., 72.
 acetyl derivative, manufacture of, (P.), B., 16.
 alcohol-soluble, B., 451.
 denitrated, action of dilute sodium hydrogen carbonate solutions on, B., 876.
 from jute, properties of, B., 197.
 nitrates, fibrous, preparation of, A., 469.
 nitroacetate, B., 340.
 determination of nitrogen and acetyl content of, B., 241.
 nitroacetates, manufacture of, (P.), B., 343, 672.
 oxalate, formation of formic acid, by hydrolysis of, A., 1034.
 xanthate, A., 74; B., 390.
 apparatus for production of, (P.), B., 16.
- α -Cellulose**, manufacture of, (P.), B., 532.
 high-grade, manufacture of, (P.), B., 625.
 production of fibres of, (P.), B., 879.
 determination of, in paper, B., 714.
- Cellulose-amyloid**, formation of, A., 337.
- Cement or Cements**, (P.), B., 159.
 manufacture of, (P.), B., 159, 397, 974, 1012.
 electric kiln for, (P.), B., 159.
 rotary kilns for, B., 22, 720, 955; (P.), B., 114.
 feeding of material for, into kilns, (P.), B., 974.
 iron and steel in plant for, B., 22.
 concentration of sludges of, (P.), B., 721.
 sieve analyses of, B., 22.
 treatment of raw slurry of, before burning, (P.), B., 396.
 filtration of slurry of, (P.), B., 542.
 burning of, (P.), B., 974.
 rotary kilns for, (P.), B., 679.
 relations between burning practice and components of raw meal for, B., 721.
 effect of carbonation on physical properties of, B., 1141.
 sintering and calcining of, (P.), B., 974.
 addition of sand and trass to, B., 885.
 absorption of free lime by admixtures of, B., 842.
 chemistry of, B., 159, 541.
 thermochemistry of, B., 493.
 solubility of, B., 441.
 chemical action of water on, B., 973.
 volume changes with water content of, B., 842.
 hydration phenomena of, B., 678.
 swelling of grains of, on hydration, B., 678.
 strength of, B., 114.
 prediction of durability of, B., 884.
 hardening of, as a colloidal process, B., 1096.
 composition for acceleration of setting of, (P.), B., 679.
 false setting of, B., 842.
 effect of storage conditions on properties of, B., 541.
 treatment of, with chlorine, (P.), B., 975.
 composition for waterproofing of, (P.), B., 495, 590, 974.
 manufacture of coloured granules for incorporation in, (P.), B., 975.
 for uniting non-porous articles, (P.), B., 113.
 coating of brick, concrete, tile, etc., surfaces with, (P.), B., 761.
 for caps for electric lamps, etc., (P.), B., 30.
 painting of façades of, B., 502.
 for furnace linings, (P.), B., 974.
 chemical characteristics of pipe-lining with, B., 65.
 for metals, (P.), B., 354.
- Cement or Cements**, adhesive, waterproof, for securing rubber to metal, (P.), B., 265.
 alumina, investigations on, B., 973.
 anhydrite or gypsum, manufacture of, (P.), B., 721.
 calcium aluminate, production of, (P.), B., 542.
 dental. See Dental cements.
 fused, manufacture of, (P.), B., 397.
 gypsum, retardation of setting of, by alcohols, B., 1141.
 high-temperature, (P.), B., 843.
 hydraulic, manufacture of, (P.), B., 542, 679.
 improvement of, (P.), B., 397.
 binding agents for, (P.), B., 1012.
- Cement or Cements**, hydraulic and white magnesian, B., 1141.
 magnesium oxide, B., 113.
 oil-well, hydrated lime and diatomite in, B., 720.
 oxychloride, compositions of, (P.), B., 397.
 Portland, manufacture of, B., 493; (P.), B., 679, 760, 974.
 furnace dust in, B., 541.
 ground raw material for, (P.), B., 760.
 from slag, B., 113.
 composition of, B., 760.
 hardening of, B., 721.
 composition for, (P.), B., 974.
 rôle of calcium hydroxide in, B., 678.
 effect of temperature on setting time of, B., 1012.
 setting and hardening of, B., 973.
 action of gypsum and setting retarders on clinker of, B., 634.
 hydration of calcium aluminate in, B., 1012.
 rates of solution of, B., 678.
 effect of free lime in clinker of, on solubility of lime and alumina therein, B., 678.
 action of aggregates on, B., 1051.
 action of kerosene on, B., 1051.
 calcium ferrites in, A., 1373.
 oxide equilibria in, A., 1010.
 influence of "tripel" on properties of, B., 973.
 composition for waterproofing of, (P.), B., 974.
 magnesium, manufacture of, (P.), B., 1012.
 mixed, B., 721.
 analysis of, B., 1012.
 determination of free lime in, B., 296.
 determination of magnesium in, B., 396.
 resinous, manufacture of, (P.), B., 1019.
 Roman dolomitic, tensile strength of, B., 973.
 slag, without clinker, B., 1051.
 sodium silicate, quick-setting, for acid-proof tanks, etc., B., 634.
 sparingly soluble, from Portland cement and arsenic, B., 202.
 Sorel, setting of, B., 296.
 analysis of, B., 1051.
 thermoplastic, (P.), B., 769.
 waterproof, (P.), B., 159.
- Cementation** of identical or different substances, (P.), B., 680.
- Cementite**, structure of, A., 415, 1359.
 formation and decomposition of, B., 115.
 segregation of, in steel, B., 442.
- Cementitious materials**, manufacture of, (P.), B., 591, 760.
 resistant to chlorine, (P.), B., 680.
- Cenosite** from Ontario, A., 818.
- Centrifugal amalgamators**. See Amalgamators.
 apparatus, (P.), B., 142*, 280.
 for clarification of liquids, (P.), B., 49.
 bowls, discharge of solids from, (P.), B., 141.
 machines, (P.), B., 2, 424.
 centrifugal clutches for, (P.), B., 49.
 draining device for, (P.), B., 953.
 for treatment of liquids, (P.), B., 2.
 continuous-discharge, (P.), B., 659.
 purifiers for liquids, (P.), B., 50*.
 separators. See under Separators.
- Centrifuges**, (P.), B., 183, 787, 1126.
 automatic discharge of, (P.), B., 3.
 driving mechanism for, (P.), B., 910, 953.
 use of, in analysis, A., 1256.
- Cephalin**. See Kephalin.
- Ceramics**, air-conditioning in, B., 63.
 prevention of efflorescence in, (P.), B., 760.
 metals in bright-gold lustre used in decoration of, B., 720.
 preparation of "brilliant gold" and "silver" lustres for, B., 1095.
- Ceramic articles**, drying of, (P.), B., 589.
 tunnel kiln for heating of, (P.), B., 1095.
 decoration of, (P.), B., 1050.
 fragile, reinforcement of, (P.), B., 541.
 with glazed, sanded surfaces, manufacture of, (P.), B., 633.
 sand-faced, manufacture of, (P.), B., 806.
 bodies, electrical conductivity of, at high temperatures, B., 1141.
 mullite formation in, B., 440.
 effect of autoclave treatment on, B., 490.
 felspar, B., 589.
 red, cause of production of colour on, by zinc vapour, B., 1050.
 casting slips, B., 64.
 goods, spraying of, in patterns, (P.), B., 396.

- Ceramic industry**, use of Tachasov-Jar clay in, B., 589.
 linings, acid-resistant, B., 806.
 materials, manufacture of, (P.), B., 22, 678.
 removal of iron from, (P.), B., 296, 806.
 soft-fired, effect of flint on elasticity of, B., 759.
 products, manufacture of, (P.), B., 248, 678.
 autoclave testing of, for resistance to crazing, B., 247.
 ware, containers for use in manufacture of, (P.), B., 202.
 presses for manufacture of, (P.), B., 159.
 firing of, (P.), B., 1050.
 burners for gas-fired kilns for, (P.), B., 1085.
 effect of kiln gases on burning of bright gold for gilding of, B., 677.
 continuous kilns for, B., 676.
 elimination of water-marks from, B., 759.
 glazed, effects of thermal shock in causing crazing of, B., 1049.
 moulded, drying and burning of, (P.), B., 759.
- Cercariae**, toxicity of colloidal metals towards, A., 1188.
- Cereals**, action in inorganic sprays on germination of, B., 312.
 yields of, in Victoria, Australia, B., 857.
 nutrition and rooting of, B., 38.
 treatment of, (P.), B., 87, 1072.
 effect of various treatments on digestibility and feeding value of, B., 1070.
 drying of grains of, in silos, (P.), B., 614.
 milling of, (P.), B., 1026.
 manuring of, B., 558.
 effect of manuring on quality of, B., 988.
 effect of phosphate manuring on storage quality of, B., 988.
 rate of nitrogen intake from ammonium salts and nitrates by, B., 989.
 apparatus for destructive distillation of husks of, (P.), B., 430.
 malting of, (P.), B., 271.
 increasing moisture content of, (P.), B., 134.
 dehydrogenating power of, A., 122.
 lignin as a factor in lodging of, A., 537.
 relation between production of anthocyan and quality of, B., 507.
 ash content of, and flour, B., 315.
lævulosans in, B., 859.
 organic acids in, A., 1199.
 pigment of, B., 608.
 effect of heat on biological value of proteins of, A., 761.
 vitamin-B₁ values for, A., 988.
 disinfection of, (P.), B., 1154.
 mottling of leaves of, as indication of magnesium deficiency, B., 1111.
 control of rust in, by sulphur dust, B., 734.
 rust diseases of, A., 133.
 biuret reaction for, B., 41.
 ferric chloride reaction for extracts of, B., 219.
- Cereal products**, (P.), B., 416.
 mashing of, (P.), B., 942.
 use of statistical constants in analysis of, B., 461.
 determination of starch in, B., 694.
- Cereal straw**, effect of alkali disintegration on vitamin content of, A., 1196.
- Cerebrospinal fluid**, refractive index of, A., 112.
 post-mortem changes in, A., 976.
 equilibrium of, with blood-plasma, A., 508, 1322.
 distribution of non-electrolytes between blood and, A., 1442.
 distribution of chloride and bicarbonate between plasma and, A., 1179.
 calcium in, A., 864.
 calcium and magnesium in, A., 1443.
 carbamide content of, in epilepsy, A., 977.
 hydrogen carbonates in, A., 975.
 p_H in, A., 1443.
 choline content of, A., 1082.
 female sexual hormones in, A., 987.
 significance of sugar in, A., 1324.
 precipitation reactions with, A., 861.
 detection of uric acid in, spectrographically, A., 858.
 determination of albumin and globulin in, A., 861.
 determination of protein in, A., 251.
- Cerite** from Kyshtym district, A., 817.
- Cerium**, A., 182.
 pure, preparation of, A., 1253.
 ionised, spectrum of, A., 276.
- Cerium alloys** with magnesium, production and refining of, (P.), B., 354.
- Cerium compounds**, induced oxidation with, A., 1017.
- Cerium salts**, absorption spectra of, A., 1109.
- Cerium carbonates**, A., 182.
 chloride, dehydration of, (P.), B., 631.
 fluoride, determination of susceptibility of, at low temperatures, A., 292.
 mercuride, A., 1381.
 dioxide, equilibrium of, with thorium oxide, zirconium oxides, and hafnium oxide, A., 157.
 as catalyst, A., 577.
 Ceric hydroxide sols, coagulation of, by electrolytes, A., 1124.
 selenate, A., 323.
 sulphate, use of, in volumetric analysis, A., 700.
- Cerotartaric acid**, A., 182.
- Cerotic acid**, derivatives of, A., 1396.
- Ceretyl alcohol**, A., 1396.
- Cetoleo-linoleostearidonin bromide**, A., 602.
- Cetyl alcohol**, and its derivatives, A., 1032.
 catalytic decomposition of, A., 440.
- Cetyl allyl ether**, A., 62.
- α -Cetyl glyceryl ether**, and its diphenylcarbimide derivative, A., 62.
- r*-Cetylcitric acid**, synthesis of, A., 1036.
- 4-Cetyloxyanisole**, and its nitration, and nitro-, A., 479.
- Chabazite**, A., 789.
 adsorption of ammonia on, A., 902.
- Chalcopyrite**, flotation of, in sea-water, B., 252.
 cathodic behaviour of, A., 571.
- Chalk**, alkali content of, B., 1047.
- Chalks**, for drawing, manufacture of, (P.), B., 170.
- Chalkones**. See Phenyl styryl ketones.
- Chamaecyparis formosensis***, oil and volatile constituents from leaves of, B., 653.
- Chamaecyparis obtusa***, essential oil from leaves of, B., 565, 698.
 essential oil of wood from, B., 365.
- Chamosite** from Thuringia, A., 1030.
- Chamotte**, preparation of, (P.), B., 492.
- Charcoal**, manufacture of, in Japan, B., 705.
 heat of adsorption of organic vapours by, A., 558.
 heat of wetting of, as a measure of activity, A., 795.
 adsorption of aromatic acids on, A., 678.
 adsorption of ethylene by, A., 419.
 adsorption of hydrogen by, A., 677.
 pure, influence of hydrogen-ion concentration on adsorption of weak electrolytes by, A., 1226.
 porosity of, A., 1006.
 swelling of, A., 160.
 improvement of calorific value of, (P.), B., 958.
 rate of combustion of, A., 1016.
 inhibition of combustion of, by antioxygenic action, B., 573.
 effect of ash on reactivity and combustibility of, B., 870.
- Charcoal**, active, A., 1226.
 structure of, A., 1002.
 specific properties of, A., 298, 904.
 adsorption by, A., 902, 1120, 1121; B., 705.
 of gases, A., 298.
 relation between gas content and, A., 34, 904.
 sorption of carbon tetrachloride by, A., 160.
 adsorption of physiologically active substances by, A., 981.
 adsorption of vapours by, A., 794, 1365.
 sorption of water vapour by, A., 160.
 action of, on lead sulphide, A., 1246.
 formation of ring-substitution products by means of, A., 805.
 use of, as catalytic agent, A., 101.
 as reducing agent, A., 476.
 reactivation of, (P.), B., 189.
 used for dechlorination of water, regeneration of, (P.), B., 189.
 Russian, regeneration of, B., 777.
 sugar, adsorption by, A., 420, 1121.
 adsorbent, ash-free, adsorption from solution by, A., 160.
 bone, drying apparatus for, (P.), B., 793.
 regeneration of, B., 747.
 finely-divided, production of, (P.), B., 430.
 "gas-free," adsorption of aliphatic acids by, A., 1006, 1366.
 platinised, condition of surface of, in hydrogen and oxygen, A., 903.
 wood, action of fluorine on, A., 52.
- Chaulmoogra oils** from Burmese plants, B., 552.

- Cheese**, manufacture of, (P.), B., 364, 696.
 milk for, B., 1153.
 effect of mode of preparation and calcium content on consistency of, B., 1119.
 treatment of, (P.), B., 415.
 electrothermal treatment of, (P.), B., 514.
 lime content of ash from, in relation to acidity of the milk, B., 944.
 effect of ammonium salts on growth of *Penicillium roqueforti* in, A., 394.
 definition of *laitage* applied to, B., 364.
 American, standardisation of milk for manufacture of, B., 740.
 Cheddar, clarification of milk for, B., 178.
 Camembert, symbiosis in ripening of, B., 610.
 cream, use of dry skim milk in manufacture of, B., 779.
 English, bacteria producing red spots in, A., 126.
 green vegetable, B., 364.
 Kingston, nitrogen distribution in ripening of, B., 695.
 Liptauer, imitation, B., 413.
 Spanish, B., 364.
 determination of water in, B., 651.
Cheese whey, determination of p_H in, B., 609.
Chelerythrine, A., 1311.
 constitution of, A., 854.
Chelidonine, constitution of, A., 500, 750.
Chelidonium majus, occurrence of sparteine in, A., 854.
Chellol, and its acetyl derivative, A., 73.
 β -*d*-Chellol glucoside, from *Ammi visnaga*, and its derivatives, A., 73.
Chemicals, apparatus for recovery of, from waste liquors, (P.), B., 370.
Chemical change, mechanism of, A., 1134.
 compounds. See under Compounds.
 constants from thermodynamics, A., 553.
 constitution. See under Constitution.
 engineering. See under Engineering.
 industry, inorganic, application of physics in, B., 47.
 plant. See under Plant.
 processes, influence of condition of atmosphere on, B., 824.
 reactions. See under Reactions.
 works, applications of mastic asphalt in, B., 1051.
Chemistry, industrial, nomograms in, B., 421.
Chemotherapy, A., 743, 1187.
Chenopodium oil, pharmacopoeial constants of, B., 863.
Cheques, safety paper for, (P.), B., 344.
Cherry-kernel oil, American, B., 31.
Chestnut extract, pure, determination of p_H of, by quinhydrone electrode, B., 131.
Chewing-gum, manufacture of, (P.), B., 696, 1026.
 base containing rubber for, (P.), B., 1121.
Chickens, embryonic mortality in, A., 255.
 antirachitic factor in, A., 1465.
 cholesterol balance in, A., 648.
 effect of protein level on growth of, A., 1450.
 fat-soluble vitamin requirements of, A., 659.
 embryo, glutathione content of, A., 860.
Chicle, X-ray study of, B., 554, 729.
Children, young, iron requirements for, A., 516.
Chimyl alcohol, structure of, A., 62.
Chironomus, haemoglobin of, A., 109.
Chiteninesulphonic acid, A., 371.
Chitin, A., 1402.
 from fungi and from crab-shells, A., 861.
 hydrolysis of, by hydrochloric acid, A., 1279.
Chitobiose, and its octa-acetyl derivative, A., 250, 1402.
Chloral, action of, on cholesterol, A., 219.
 on halogen-substituted *p*-tolylhydrazines, A., 835.
 condensation of, with benzene, A., 1050.
 with *m*-cresotic acid, A., 1053.
N-acetyl-3-bromo-*p*-tolylhydrazones, A., 835.
Chloral hydrate, toxicology of, A., 518.
 action of, on frog's heart, A., 388.
Chloramines, chemistry of, B., 1009.
Chloramine-T, detection of, in bread, B., 739.
 separation and detection of halogen ions by, A., 1257.
Chlorates. See under Chlorine.
Chlorella, function of manganese in growth of, A., 400.
Chlorides. See under Chlorine.
Chlorin, metallic derivatives of, A., 1432.
Chlorin f, and its esters, A., 369.
Chlorin k, and its methyl ester, A., 1075.
Chlorins, structure and absorption spectra of, A., 1310.
Chlorination, in methyl-alcoholic solution, A., 346.
 thermal, in the gaseous phase, with short heating periods, A., 1267.
Chlorine, atomic weight of, A., 1108.
 atomic weight and isotopes of, A., 1208.
 isotopes of, A., 543, 1348.
 production of, (P.), B., 632.
 electrolytically, (P.), B., 719, 758*.
 and iron compounds, (P.), B., 393.
 recovery of, from electrolytic cells, (P.), B., 632.
 composition for generation of, (P.), B., 202.
 spark spectrum of, A., 540.
 ionised, spectrum of, A., 276.
 photochemical reaction of, with hydrogen, A., 47, 179, 250, 319, 806, 1136, 1137.
 action of light on mixtures of ozone and, A., 1018.
 and its mixtures with air, mobility of gaseous ions in, A., 1348.
 vapour, chemical constant of, A., 674.
 liquefaction of, (P.), B., 925.
 liquid, reactions with, A., 184.
 compression of, (P.), B., 247.
 adsorption of, from air, A., 419.
 viscosity of, A., 1117.
 equilibria in mixtures of bromine and, A., 431.
 equilibrium between nitric oxide, nitrosyl chloride, and, A., 1232.
 solubility of, in chloride solutions, A., 800.
 atoms, migration of, from carbon to sulphur, A., 964.
 nuclear, influence of arsino-group on activity of, A., 1173.
 reaction between acetylene and, B., 796.
 induction of reaction between benzene and, by ethylene, A., 610.
 effect of nitrogen trichloride on reaction between hydrogen and, A., 179.
 bleaching with, A., 572, 573, 802.
 luting material resistant to, (P.), B., 680.
 crystalline, entropy of, A., 674.
Chlorine compounds, combustion of, in Berthelot's bomb, A., 1262.
Chlorine fluoride, heat of formation of, A., 912.
 monoxide, heat of formation of, A., 685.
 vapour pressure of, A., 156.
 thermal decomposition of, A., 915.
 decomposition of, in the gaseous state and in carbon tetrachloride, A., 690.
 and dioxide, heats of dissociation of, A., 1236.
 dioxide, photochemical formation of, from chlorine monoxide, A., 48.
 preparation of, (P.), B., 588.
 spectrum and photochemical behaviour of, A., 1210.
 photochemical decomposition of, in carbon tetrachloride, A., 1137, 1377.
 delignification of wood by means of, A., 1101.
Hydrochloric acid, photochemical formation of, A., 1018.
 production of, (P.), B., 619.
 and carbon, (P.), B., 431.
 gaseous, concentrated, production of, (P.), B., 803.
 band spectrum of, A., 19.
 ultra-violet absorption spectrum of, A., 19, 1350.
 ultra-violet band spectrum of, A., 282.
 molecular rays of, in an electric field, A., 15.
 dielectric constant of, A., 669.
 electro-endosmosis and conductivity of solutions of, A., 914.
 activity coefficient of, in aluminium chloride solutions, A., 1234.
 transport numbers of, in ethyl alcohol, A., 433.
 entropy change in dissociation of, A., 1222.
 liquid, Raman effect for, A., 20.
 solid, spectrum of, A., 1211.
 b. p. and distillation curves of mixtures of water and, B., 60.
 adsorption of, by glass, A., 558.
 solubility of, in various solvents, A., 901.
 heat content values of aqueous solutions of, A., 912.
 distribution of, in gelatin gels, A., 909.
 combination of, with gelatin, A., 1125.
 catalytic addition of, to unsaturated hydrocarbons, B., 328.
 etching of galena with, A., 548.
 detection of, in presence of hydrobromic acid, A., 185.
 determination of, in presence of salicylic and sulphuric acids, A., 1438.

Chlorine :—

- Chlorides, manufacture of, (P.), B., 293.
 anhydrous, production of, (P.), B., 676.
 saturated, absorption spectra of, A., 667.
 determination of, A., 1257.
 in bromides, B., 971.
 in presence of bromides and iodides, A., 585.
 in blood, A., 641.
 in milk, B., 1153.
 determination of bromides in, B., 1009.
 Chlorates, structure of, A., 1113.
 detection of, in presence of perchlorates and nitrates, A., 451.
 determination of, A., 811.
 Perchloric acid, purification of, by vacuum distillation, A., 448.
 hydrated, oxonium structure of, A., 448.
 density-composition table for concentrated solutions of, A., 451.
 swelling of cellulose in, A., 167.
 as standard for acidimetry, A., 450.
 detection of, in cellulose acetate, B., 1134.
 Perchlorates, A., 1128.
 structure of, A., 548, 549.
 cubic crystal structure of, A., 414.
 electrolysis of, in non-aqueous solutions, A., 1130.
 Perchlorate ions, mobility of, in methyl alcohol, A., 43.
 Chlorites, oxidation of, to chlorates, by permanganate, A., 184.
 Hypochlorites, stable, manufacture of, (P.), B., 757.
 decomposition of solutions of, A., 802.
 factors influencing stability of solutions of, B., 839.
 production of compositions of, (P.), B., 202*, 538, 1011*.
 electrometric analysis of solutions of, B., 1047.
 Chlorine organic compounds, Raman spectra of, A., 1211.
 in animal tissues, A., 1321.
 Chlorine detection and determination :—
 analysis of mixtures of, with chlorine monoxide, A., 1141.
 detection of, in air, (P.), B., 744.
 active, detection of, in fabrics, B., 291.
 determination of, in small amounts, A., 450.
 in bromides, A., 811.
 in iodised fatty oils, B., 1018.
 in sulphur monochloride, B., 488.
 Chlorine ions, electron distribution in, A., 1356.
 Chlorite, A., 1030.
 crystallography of, A., 789, 1360.
 thermal analysis of, A., 594.
 of Bierk, A., 817.
 from the Tatia Mts., A., 706.
 Chlorites. See under Chlorine.
 "Chlorknallgas," A., 1136.
 Chloroanil. See *p*-Benzoquinone, *tetrachloro*-.
 Chloroform, Raman spectrum of, A., 1353.
 X-ray scattering of, A., 26.
 vapour refraction and dispersion of, A., 1355.
 dielectric constant of, A., 894.
 density of mixtures of benzyl alcohol and, A., 295.
 heat of adsorption of, by charcoal, A., 558.
 solubility of, in water, A., 677.
 automatic distillation of, A., 195.
 as sewage preservative, B., 419.
 action of, on oxido-reduction in tissues, A., 649.
 toxicity of ether vapour and, to bacteria, A., 267.
 bactericidal properties of, B., 1118.
 poisoning during narcosis by, A., 872.
 Chlorogen, electrolytic, effect of acid additions on disinfectant efficiency of, A., 126.
 Chloroimines, A., 90.
 Chlorometric value, B., 587.
 Chlorophyll, A., 496, 744, 1431.
 origin of, and its relation to blood-pigments, A., 247.
 formation of, A., 634, 1340.
 effect of liver extracts on development of, A., 884.
 allomerisation of, A., 745.
 infra-red absorption spectrum of, A., 20.
 dehydrogenation of, A., 634.
 degradation of, A., 368, 966.
 deficiency of, A., 1099.
 preparation and constitution of porphyrins of, A., 1432.
 porphyrin in urine after ingestion of, A., 757.
 evaluation of preparations of, B., 223.
 Chlorophyll, determination of, B., 904.
 in recent and fossil sediments, A., 752.
 Chlorophyll *a*, constitution of, A., 744, 1075, 1432.
 Chlorophyll series, A., 368, 1075, 1169, 1310.
 Chloropierin, action of potassium iodide on, A., 1403.
 Chloroplatinic acid. See under Platinum.
 Chloroporphyrins. See under Porphyrins.
 Chlorosis, lime-induced, treatment of, with iron salts, B., 899.
 Chlorosulphonic acid, action of, with benzenedithioglycolic acids, A., 234.
 on phenols, A., 83.
 on Δ^1 -undecenoic acid, A., 824.
 "Chlumin," B., 763.
 Chocolate, manufacture of, (P.), B., 696, 823, 1154.
 production of mass of, for rolling, (P.), B., 861.
 mills for grinding of, (P.), B., 1126.
 addition of lecithin to, (P.), B., 696.
 milk, vitamin-A in, B., 1071.
 radioactive, production of, (P.), B., 273.
 containing vitamins, preparation of, (P.), B., 415.
 analysis of, B., 44.
 detection of foreign seed-kernels in, B., 414.
 determination of fat in, B., 43.
 Chocolates, manufacture and analysis of, B., 564.
 apoCholadienic acid, and its methyl ester, A., 841.
 Cholam plant, growth and nutrition of, A., 883.
 Cholanic acid, 3:7:13:14-*tetrahydroxy*-, and its methyl ester, A., 841.
 apoCholanic acid, and its methyl ester, A., 841.
 β -Cholatricenic acid, A., 957.
 Choleic acid, crystallography of, A., 897.
 β -Cholenic acid, A., 957.
 Cholenic acid, *dihydroxy*-, methyl ester, oxide of, A., 841.
 3-Cholenic acid, chloro-, and its derivatives, A., 957.
 Cholera in pigs, manufacture of vaccine for, (P.), B., 782.
 Cholestanol, chloro-, and its acetate, A., 1412.
 Cholesterol, constitution of, A., 481, 619, 1154, 1412.
 and its esters, effect of X-rays on, A., 443.
 manufacture of solutions of, (P.), B., 824.
 action of chloral and trichloroacetic acid on, A., 219.
 action of phosphorus pentasulphide on, and thio-, and their derivatives, A., 481.
 union of, with protein fractions, A., 640.
 in bacteria, A., 266.
 of protoplasm, A., 507, 644, 975.
 in shells of Lamellibranchs, A., 507.
 effect of, on alcoholic fermentation with beer yeast, A., 1457.
 permeability of tissues to, A., 117.
 function of, in tissues, A., 1081.
 effect of feeding with, on blood, A., 973.
 influence of gases on distribution of, between corpuscles and plasma, A., 1176.
 balance of, in chicks, A., 648.
 esters, action of fats and, on metabolism, A., 867.
 sulphite, A., 819.
 determination of iodine value of, A., 1318.
 determination of, B., 413.
 by oxidation of the digitonide, A., 1174.
 microchemically, A., 1318.
 in blood, A., 505.
 in blood and serum, A., 755.
 in blood-plasma and -serum, A., 1080.
 in blood-serum, A., 377.
 O-Cholesterylbenzoin, and its bromide and derivatives, A., 619.
 apoCholic acid, and its derivatives, A., 841, 957.
 Choline, isolation of, from beet molasses, B., 85.
 action of iodine and sodium hydroxide on, A., 75.
 and its esters, co-ordination compounds of chloroplatinates of, A., 943.
 hydrochloride, glucoside of, A., 778.
 derivatives in plasma after suprarenal extirpation, A., 115.
 as poison in diseased barley, A., 778.
 in the placenta, A., 1442.
 detection of, in plants, A., 778.
 determination of, A., 606.
 in dilute solutions, A., 829.
 in blood, A., 1320.
 Choline, chloro-, chloride, and thio-, chloride and its derivative with silver chloride, A., 470.
 thio-, halides of, A., 470.

Choline-*n*-butyrylcholine chloroplatinate, A., 943.
 Cholineglycolylcholine chloroplatinate, A., 943.
 Cholinepropionylcholine chloroplatinate, A., 943.
 Cholinepyruvylcholine chloroplatinate, A., 943.
 "Cholinsulin," oral influence of, A., 268.
 β -Choloidanic acid, and its methyl ester, A., 841.
 ψ -Choloidanic acid, constitution of, A., 352.
 Chondridin, A., 228.
 Chondroitinsulphuric acid, enzymic degradation of, A., 875.
 Chondrosulphatase, A., 1089.
 Chromanone, 7:8-*di*hydroxy-, and its derivatives, A., 361.
 Chromates. See under Chromium.
 Chrome alum, crystalline, absorption spectrum of, A., 667.
 Chrome alums, velocity of crystallisation of, A., 918.
 Chrome-green, analysis of, B., 851.
 Chrome liquors, determination of sulphate in, B., 587.
 Chromic acid. See under Chromium.
 Chromite, deposits of, in Togoland, A., 1029.
 decomposition of, A., 1381.
 low-grade, chemical treatment of, B., 1091.
 Chromium, atomic weight and isotopes of, A., 280.
 manufacture of, from its chloride, (P.), B., 638.
 and its alloys, manufacture of, (P.), B., 933, 1144.
 electrodeposition of, B., 25, 162; (P.), B., 29, 1058.
 from ammonium chromioxalate, B., 682.
 effect of cathode metal in, B., 929.
 in thick layers, B., 929.
 on aluminium, B., 592.
 electroplating with, (P.), B., 303, 354, 639, 813, 847, 933, 1103.
 baths for, (P.), B., 121.
 covering liquid for, B., 352.
 effect of metallic sulphates on, B., 118.
 effect of nitric acid in, B., 1056.
 determination of cathodic yield in, B., 207.
 tank for, (P.), B., 765.
 choice of metals for, B., 1143.
 on aluminium and its alloys, B., 1057.
 on brass, etc., (P.), B., 256.
 on small articles, (P.), B., 813.
 of metal wires, (P.), B., 933.
 analysis of solutions for, B., 1057.
 plating with nickel and, (P.), B., 303.
 calcium chloride testing of plating deposits of, B., 162.
 removal of platings of, (P.), B., 29.
 coating of iron with, (P.), B., 1101.
 spectrum of, A., 887, 1344.
 ionised, spectrum of, A., 6.
 absorption spectra of solutions containing, A., 544.
 K-series spectrum of, A., 887.
 anomalous X-ray diffraction of, A., 781.
 melting point of, A., 59, 294.
 heat treatment of deposits of, to increase corrosion resistance, B., 162.
 passivity of, A., 173, 571, 915.
 electroplated, X-ray structure of, A., 1358.
 crystalline modifications of, B., 118.
 improvement of durability of, B., 845.
 Chromium alloys with aluminium, A., 1223.
 with cobalt, A., 41.
 magnetic properties of, A., 1005.
 with cobalt and tungsten, (P.), B., 1103.
 with copper and nickel, (P.), B., 120.
 with iron, (P.), B., 353.
 electrodeposition of, B., 118.
 X-ray examination and magnetic tests on, B., 1013.
 magnetic and electrical properties of, B., 122.
 heat stable, production of, (P.), B., 120.
 pickling of, (P.), B., 255.
 with iron and nickel, B., 24, 637.
 corrosion of, A., 575.
 corrosion-resistant, (P.), B., 980.
 with nickel, B., 24; (P.), B., 1015.
 melting of, in hydrogen, B., 1014.
 crystal structure of, A., 1364.
 Chromium bases, complex, A., 170.
 Chromium carbides, equilibrium of formation of, A., 1005.
 nitride, heat of formation of, A., 432.
 sesquioxide (*chromic oxide*), production of, (P.), B., 882.
 equilibrium of, with alumina, A., 1010.

Chromium sesquioxide, melting of mixtures of aluminium oxide, magnesium oxide and, A., 911.
 phase equilibria of silica and, A., 41.
 effect of ignition temperature on, A., 924.
 activated, adsorption of hydrogen by, A., 1226.
 trioxide, manufacture of, (P.), B., 157.
 crystal structure of, A., 789, 1115.
 oxides, for pigments, manufacture of, (P.), B., 62.
 sulphate, green transformation of, to violet, A., 1375.
 compounds of, with bivalent sulphates and sulphuric acid, A., 1381.
 Chromic salts, reactions of violet solutions of, A., 1140.
 complex, absorption spectra of, A., 996.
 Chromic carbonate, amines of, A., 1381.
 chloride, absorption spectrum of, A., 545.
 hydroxide, A., 303.
 gels, preparation of, A., 1231.
 Chromic acid, production of, (P.), B., 804.
 conductivity and density of solutions of, A., 43.
 decomposition of halides by mixtures of sulphuric acid and, A., 690.
 use of, in oxidation of organic compounds, A., 460.
 catalytic action of acids in oxidation of alcohol by, A., 1245.
 Chromates, preparation of, B., 348.
 manufacture of, (P.), B., 157, 247*.
 adsorption of, by colloidal aluminium hydroxide, A., 420.
 determination of, spectrophotometrically, in mixtures with dichromates, A., 1386.
 Dichromates, determination of, potentiometrically, A., 1025.
 spectrophotometrically, in mixtures with chromates, A., 1386.
 Polychromates, paramagnetism of, A., 411.
 Chromium organic compounds, A., 1435.
 Chromium detection and determination:—
 detection of, spectroscopically, A., 1143.
 in minerals and rocks, A., 455.
 determination of, with dropping mercury cathode, A., 1261.
 in ores and alloys, B., 299.
 in steel, B., 297.
 electrometrically, in steel and ferrochromium, B., 24.
 gravimetrically, A., 56.
 iodometrically, and its separation from iron and nickel, A., 1262.
 spectrographically, in rubies, A., 455.
 volumetrically, in presence of nickel, A., 1026.
 determination of aluminium in, B., 298.
 Chromium ores, smelting of, (P.), B., 28.
 working up of, (P.), B., 28.
 Chromium plate, testing of, for abrasion resistance, B., 446.
 Chromone hydrazone, A., 218.
 Chromone group, A., 963, 1305, 1423.
 Chromophores, organic, structure of absorption resonators of, A., 1351.
 unsaturated, effect of, on pyronine dyes, A., 1426.
 Chromoproteins, A., 1436.
 fluorescence spectra of, A., 884.
 "Chromprotekt," B., 352.
 Chrysanthemin chloride, synthesis of, A., 1423.
Chrysanthemum cinerariaefolium. See Pyrethrum.
 Chrysarobin, detection of, in chrysophanic acid, B., 514.
 Chrysene, synthesis of homologues of, A., 1157.
 Chrysofluorenone-4-carboxylic acid, A., 741.
 Chrysophanic acid, detection of chrysarobin in, B., 514.
 Chrysotile, crystal structure of, A., 415.
 Chylomicrons, emulsions of, A., 428.
 Chymase, bacterial, A., 1460.
Cicer arietinum, globulins of, A., 537.
Cicuta virosa. See Hemlock, water.
 Cicutoxin, determination of, A., 1342.
 Cider, manufacture of, B., 903.
 formation and detection of β -butylene glycol in, B., 693.
 English, improvement of, B., 314.
 Cigars, Dutch, nicotine content of, B., 416.
 Cigar smoke, ammonia in, B., 565.
 Cigarette paper. See under Paper.
Cimicifuga foetida, cimitin from rhizomes of, A., 401.
 Cimitin, A., 401.
 Cinchona, tinctures of, B., 45, 742.
 assay of, potentiometrically, B., 222.
 Cinchona alkaloids, A., 371, 850, 1433.
 action of β -phenylpropionic acid on, A., 1076.

- Cinchona bark, determination of total alkaloids in, B., 89.
 Cinchona galenicals, determination of, B., 861.
 Cinchonic acid, derivatives of, A., 363.
 Cinchonic acids, substituted, aminoethanol derivatives of, A., 1167.
 Cinchonidine aurothiosulphate, A., 1172.
 determination of, with quinhydrone electrode, A., 246.
 Cinchonine aurothiosulphate, A., 1172.
 determination of, with quinhydrone electrode, A., 246.
 Cinchoninic acid, *d*- β -octyl ester, A., 965.
 Cinchonuric acid, and its derivatives, A., 363.
 Cinchophen. See 2-Phenylquinoline-4-carboxylic acid.
 Cineoles, production of, (P.), B., 698.
 Cinnamaldehyde, synthesis of, A., 843.
 magnetic rotation of, A., 670.
 reaction of, with α -anilinophenylacetonitrile, A., 849.
 homologues of, A., 485.
 2:4:6-trichlorophenylhydrazone, A., 1046.
 2:4-dinitrophenylhydrazone, A., 937.
 Cinnamaldehydes, substituted, reduction of, catalytically, A., 1056.
 bromo-, A., 222.
 Cinnamaldoximes, bromo-, and their acetyl derivative, A., 222.
 Cinnamanilide, *o*-nitro- α -cyano-. See ω -Benzylidenecetanilide, ω -cyano-*o*-nitro-.
 Cinnam-*p*-anisidide, and β -bromo-, A., 223.
 Cinnamic acid, optical activity of, A., 482.
 oxidation of, by potassium permanganate, A., 1053.
 o-chloroanilide, and *p*-bromoanilide and its dibromide, A., 622.
 p-iodophenyl ester, and its iododichloride, A., 837.
l-Cinnamic acid, β -octyl ester, A., 502.
 Cinnamic acids, isomeric, ultra-violet absorption spectra of, A., 1110.
 substituted, absorption and fluorescence caused by salt formation of, A., 284.
 Cinnam-*l*-methylanilide, A., 502.
 Cinnamionitrile, salts of, A., 609.
 Cinnamionitriles, α -bromo-, A., 222.
Cinnamomum camphora, camphor and camphor oil from, B., 697.
dl-Cinnamoylalanine, A., 481.
 8-Cinnamoyldihydropentindole, and 5-nitro-, A., 1166.
 Cinnamoylretene, and *p*-nitro-, A., 1297.
 8-Cinnamoyltetrahydropentindole, 5-chloro-10-nitro-9-hydroxy-, and its acetyl derivative, and *mono*- and *di*-nitro-9-hydroxy-, A., 1166.
 Cinnamyl allyl, butyl, ethyl and propyl ethers, A., 350.
 chloride, and its Grignard reagent, preparation of, A., 1405.
 reaction between magnesium and, A., 1290.
 Cinnamylidenecetic acid, α -cyano-, methyl ester, A., 1392.
*allo*Cinnamylidenecetic acid, isomerism of, in various solvents, A., 180.
 Cinnamylidenethiohydantoin, and its acetyl derivative, A., 1170.
 Circulation apparatus for liquids, A., 929.
 Cirrhosis, protein fractions of puncture fluids in, A., 1180.
 Citraconic acid, and its anhydride, preparation of, A., 824.
 Citraconimide, bromo-, ethyl ester, A., 967.
 Citraconyl-2:4:6-trichlorophenylhydrazide, A., 1046.
 Citric acid, anhydrous, preparation of, (P.), B., 965.
 synthesis of, A., 607.
 xylose as substrate for production of, by fermentation, B., 217.
 decomposition of, by sulphuric acid, A., 315.
 action of *Bacillus pyocyaneus* on, A., 526.
 formation of, by moulds, A., 394, 524, 1333.
 in amniotic fluid, A., 643.
 salts, effect of, on urinary excretion of calcium, A., 118.
 determination of, mercurimetrically, A., 1079.
 alkali salts, heats of dilution and activity coefficients of, A., 1126.
 ammonium and iron salts, preparations containing, B., 221.
 dilithium alkali salts, manufacture of, (P.), B., 631.
 potassium salt, solubility of, in glycerol, A., 558.
 sodium bismuth salt, preparation of, B., 675.
 properties of ethylene glycol solutions of, A., 684.
 determination of, A., 1455.
 in coffee, B., 1071.
 Citrinin, and its derivatives, A., 1094.
Citromyces glaber, citric acid production by, A., 1333.
 Citromycetin, and its derivatives, A., 1093.
 Citromycin, and its derivatives, A., 1093.
 Citronellaldehyde (*citronellal*), cyclisation of, A., 735.
 addition of magnesium benzyl chloride to, A., 1037.
 oxime, reaction of, with acetic anhydride, A., 604.
 Citronellol, determination of, in presence of geraniol and nerol, A., 972.
 Citronetin, synthesis of, and its derivatives, A., 1162.
Citrullus vulgaris. See Watermelons.
Citrus, solubility changes of inorganic constituents of, A., 883.
 fertiliser requirements of seedlings of, B., 775.
 necessity of boron compounds for growth of, A., 1340, 1466.
 destruction of rust mites on, B., 39.
 effect of arsenic spraying on composition of fruits of, B., 775.
 treatment of fruits of, with sodium carbonate, A., 769.
 sap concentration and inorganic constituents of leaves of, A., 1201.
Citrus aurantium, carotenoid of, A., 1100.
Citrus limetta, pectin from, B., 860.
 Citrus trees, fertilising of, B., 775.
 effect of sulphur on, B., 941.
 Citrylidenemalonic acid, constitution of, A., 961.
 Clamps, instantaneous locking, A., 190.
 Clarain, combustion of, B., 659.
 Clausthalite, A., 707.
Claviceps purpurea, alkaloid content of, A., 1333.
 Clay or Clays, A., 595.
 as minerals and as colloids, A., 930.
 recovery of, from petroleum refining, (P.), B., 665.
 determination of total surface area of, B., 898.
 effect of sodium silicate on properties of, B., 490.
 influence of water content on drying and firing properties of, B., 805.
 purification of, (P.), B., 1011.
 sintering of, (P.), B., 759.
 determination of refractoriness of, B., 440.
 device for testing bonding strength of, (P.), B., 760.
 compound for increasing strength of, (P.), B., 492.
 transverse strength of mixtures of, B., 64.
 measurement of plasticity of, B., 490, 1050.
 plastic flow measurements in, B., 676.
 adsorption of aluminium and thorium chlorides by, A., 298.
 adsorption of barium and aluminium ions by, A., 298.
 effect of salt content on water absorption of, B., 898.
 suspensions, electrical dewatering of, B., 490.
 sediment from, A., 1230.
 effect of calcium sulphate on filtration of, B., 1141.
 effect of autoclave treatment on, B., 490.
 treatment of, with nitric acid, B., 487.
 for production of porcelain grinding balls and lining blocks, B., 925.
 for production of refractories, (P.), B., 65.
 manufacture of heat- and acid-proof products from, B., 248.
 emulsified compositions of, (P.), B., 843.
 for glass-melting pots, B., 805.
 acid, decolorisation of petroleum with, B., 375.
 adsorbent, preparation of, (P.), B., 539.
 revivification of, (P.), B., 474.
 bleaching, separation of oil from, (P.), B., 474.
 activated, B., 802.
 colloidal, reactions of, A., 332.
 decolorising, manufacture of, (P.), B., 631.
 treatment of, (P.), B., 1079.
 effect of ignition loss on adsorptive power of, A., 903.
 from south-west Finland, A., 192.
 heavy, effect of electrolytes on, B., 64.
 Japanese, action of, on terpene compounds, A., 735.
 Japanese acid, A., 1029, 1266; B., 232.
 Kanbara, adsorbed moisture in, A., 161.
 Missouri burley and diaspore, grading and sampling of, B., 719.
 Ohio, carbon and sulphur content of, B., 64.
 plastic, static rigidity of, B., 884.
 raw, treatment of, before moulding, (P.), B., 884.
 refractory, determination of alumina in, B., 395.
 stiff, apparatus for tests on, B., 1011.
 Tshasov-Jar, A., 707; B., 589.
 unfired, determination of tensile strength of, (P.), B., 64.
 from oil-bearing strata of the United States, A., 708.
 analysis of, B., 972.
 Clay bodies, effect of silicon carbide in, B., 248.
 dust, power press for shaping articles from, (P.), B., 806.

- Clay products, purification of, (P.), B., 842.
 continuous kilns for burning of, B., 676.
 slip, effect of organic compounds on properties of, B., 440.
 ware, drying of, (P.), B., 884.
 dimensional changes in, during firing, B., 843.
 effect of firing conditions on soluble salts in, B., 719.
- Cleaning, B., 482.
 colloids for, (P.), B., 827.
 dry. See Dry-cleaning.
- Cleaning agents, (P.), B., 12, 355, 1003.
 manufacture of, (P.), B., 195, 237, 384, 386, 579, 797, 1041, 1086, 1092.
 for metals, etc., (P.), B., 676.
 bactericidal effects of, and their action on metals, B., 363.
 paste, (P.), B., 817.
- Cleve acid. See 1:7-Naphthylaminesulphonic acid.
- Cloth, washing machine for, (P.), B., 674.
 production of designs on, (P.), B., 583.
 selections of warp specimens in sampling of, B., 582.
 impermeable, (P.), B., 755.
- Cloths, cotton. See Cotton cloths.
- Clove oil, preparation of isoeugenol from, A., 479.
 acetyleneugenol in, B., 365.
- Clovene, fractionation of, A., 737.
- Clovenic acid, and its derivatives, A., 736.
- Clover, effect of climate on nitrogen content of, B., 175.
 red and white, assimilability of calcium and phosphorus from W. Washington soils by, B., 1067.
 sweet, effect of diet of, on serum-calcium, A., 515.
 white, effect of pH of soils on growth of, and on nectar secretion, B., 989.
- Clover silage, nutritive value and digestibility of, B., 317.
- Clupanodonic acid, action of, similar to folliculin, A., 879.
- Clupanodonoarachidono-olein bromide, A., 602.
- Clupanodonolinolenozoomarin bromide, A., 602.
- Clupanodonostearidonozoomarin bromide, A., 602.
- Clupeine, A., 245.
 action of protaminase on, A., 984.
- Clutches, friction materials for, (P.), B., 571.
- Coacervation, complex, A., 682, 908.
- Coagulation and streaming potential, A., 977.
 of colloids, A., 425, 682.
 by electrolytes, A., 797.
 reversible, in living tissues, A., 649, 872, 1328.
- Coal, origin of, A., 596, 931 ; B., 465.
 formation of, A., 460, 931, 1030 ; B., 184.
 correlation of seams of, by spore types, B., 4.
 fuel technology and classification of, B., 1031.
 petrography and classification of, B., 1031.
 constitution and classification of, B., 912.
 chemical constitution of, B., 323.
 composition of, B., 572.
 plant for preparation of, for pulverised-fuel- and stoker-fired boilers at Synthetic Ammonia & Nitrates, Ltd. works, B., 830.
 absorption of pyridine vapour by, B., 955.
 swelling pressure of, B., 324.
 measurement of plastic properties of, B., 281.
 determination of hygroscopic properties of, B., 572.
 action of solvents on, B., 427.
 treatment of, (P.), B., 575.
 apparatus for, (P.), B., 188.
 cleaning of, B., 657 ; (P.), B., 377, 1035.
 apparatus for, (P.), B., 957.
 pneumatic apparatus for, (P.), B., 662.
 influence of dry and wet cleaning of, on gas, coke, etc., B., 913.
 removal of dust from, (P.), B., 1128.
 washing apparatus for, (P.), B., 8, 795*, 830, 1035.
 washing machines for, (P.), B., 429.
 washer boxes for, (P.), B., 104.
 drying of, B., 955, 1080 ; (P.), B., 614.
 drying and powdering of, (P.), B., 430.
 machines for grading or screening of, (P.), B., 916.
 apparatus for pulverisation of, (P.), B., 11*.
 sorting of, (P.), B., 866.
 macroscopic selection of, for gasworks, B., 323.
 supervision of purity of, B., 96.
 heating of, (P.), B., 662.
 combustion of banded constituents of, B., 659.
 tendency of, to spontaneous ignition, B., 466, 1031.
- Coal, apparatus for determination of self-ignition temperature of, B., 184.
 pyritic oxidation in relation to spontaneous combustion of, B., 324.
 determination of caking power of, in aluminium apparatus, B., 790.
 determination of caking properties and volatile matter of, B., 617.
 caking power and swelling of, B., 827.
 carbonisation of, B., 523 ; (P.), B., 329, 793.
 physics of, B., 572.
 apparatus for, (P.), B., 189, 830, 957.
 retorts for, (P.), B., 430.
 in vertical retorts, B., 97, 372.
 low-temperature, (P.), B., 1082.
 aqueous liquors from, B., 523.
 low-temperature carbonisation and distillation of, (P.), B., 872.
 effect of inorganic constituents on carbonisation and gasification of, B., 98.
 coking of, (P.), B., 232.
 at low temperatures, (P.), B., 378.
 agglutination and activation of, B., 185.
 heat of coking and of decomposition of, B., 427.
 melting of, during coking, B., 428, 573.
 swelling of, during coking, B., 373, 747.
 swelling pressure of, and formation of "spongy" coke, B., 1031.
 influence of constituents of, on its coking properties, B., 827.
 production of high-grade lump coke from, (P.), B., 102.
 concentration of, (P.), B., 188.
 distillation of, (P.), B., 575, 708, 830.
 ovens for, (P.), B., 189, 1035.
 retort for, (P.), B., 1129.
 cooling of gases from, (P.), B., 102.
 low-temperature, B., 229.
 dry rotary laboratory furnace for, B., 748.
 destructive distillation of extracts of, (P.), B., 102.
 destructive distillation of mixtures of tar and, (P.), B., 1129.
 hydrogenation of, B., 329.
 catalysts for, (P.), B., 9.
 destructive, (P.), B., 102, 431, 709.
 separation of oils, tars, etc. in, (P.), B., 190.
 berginisation of, B., 282.
 briquetting of, without addition of tar, (P.), B., 1129.
 slacking of, B., 96.
 investigation of, by oxidation, B., 184.
 effect of weathering on friabilities of, B., 96.
 bacteria in, B., 228.
 bitumens from, B., 281.
 evolution of gases from, B., 828.
 extraction of hydrocarbons from, (P.), B., 377.
 production of liquid hydrocarbons from, B., 956.
 hydrogen in, B., 426.
 phenol content of oils from, B., 574.
 extraction of resins from, (P.), B., 377.
 fossil resins in, A., 818.
 ulmin content of, B., 229.
 extraction of values from, (P.), B., 430.
 products from, (P.), B., 148*.
 production of resinous materials from, (P.), B., 1000.
 apparatus for manufacture of balls of, (P.), B., 236.
 production of mixture of, with oil, (P.), B., 188.
 preparation of fuel from, (P.), B., 285.
 sampling of, B., 955, 956.
 portable apparatus for, B., 660.
 analysis of, B., 466, 790, 827.
 solvent analysis of, B., 747.
 evaluation of, for gas manufacture, B., 1127.
 Geipert assay apparatus for, B., 184.
 high-temperature assay of, by the Gray-King method, B., 660.
 determination of volatile matter in, B., 1031.
 effect of illium crucibles on volatile determinations in, B., 229.
 determination of bound oxygen in, B., 616.
- Coal, American, yields of coke, gas, etc. from, B., 6.
 anthracitic and bituminous, catalytic hydrogenation of, and their distillation products, B., 790.
 artificial, production of, B., 50.
 Austrian, economic utilisation of, B., 704.
 bituminous, determination of agglutinating power of, B., 5.
 gasification of, B., 617.

- Coal, bituminous, destructive hydrogenation of, (P.), B., 144.
 oxidation of, B., 427.
 banded coking of, B., 185.
 and coking, origin and structure of, A., 930.
 boghead, origin of, B., 4.
 brown, fibrous lignites in, A., 60.
 carbonisation of, B., 1127.
 production of benzene from, B., 282.
 production of coke from, B., 4.
 production of oil by pressure distillation of, B., 51.
 utilisation of, as fertiliser, B., 457, 507.
 Hungarian, ignition of, B., 373.
 determination of moisture in, B., 50.
 Canadian, sulphur in, B., 228.
 cannel, distillation of, (P.), B., 190.
 coking, plastic range of, B., 5.
 caking, swelling and expansive pressure of, B., 660.
 degree of fineness of admixtures to, B., 747.
 crushed, bulk density of, B., 999.
 testing of, B., 185.
 Donetz, low-temperature carbonisation of, B., 523.
 coking and stability of, B., 4.
 radioactivity of, A., 1146.
 hard, determination of moisture in, B., 1080.
 Illinois, combustion tests of, B., 427.
 Indian, ball structure in, B., 912.
 Iowa, storage, coking, washing, and weathering of, B., 188.
 Japanese, relation between coking time of, and oven width and output capacity, B., 98.
 Kuznetz, A., 931.
 coking of, B., 4.
 mineral, oxidation of, in oxygen, B., 4.
 preheating, gases from, B., 373.
 pulverised, combustion of, B., 185, 573.
 burners for, (P.), B., 333.
 furnaces for burning of, (P.), B., 790.
 Ruhr, resin inclusions in, A., 60.
 Rumanian, classification of, B., 523.
 influence of constituents on gases from, B., 523.
 Russian, determination of coking properties of, B., 4.
 small, sampling of, B., 746.
 splint, testing of, by vacuum distillation, B., 1080.
 steam, South Wales, action of heat on, B., 999.
 Virginian, unit coal studies on, B., 572.
 from Wemyss Colliery, Fife, A., 931.
 Witbank, cleaning of, B., 4.
 Coal ash, composition and calorific value of, B., 827.
 determination of melting point of, B., 956; (P.), B., 869.
 dehydrating action of, B., 5.
 briquettes. See under Briquettes.
 cakes, compression of, (P.), B., 1131.
 dust, preparation of sections and analysis of, B., 617.
 spontaneous electrification of clouds of, B., 869.
 inflammability of, B., 426.
 briquetting of, (P.), B., 1035.
 gas. See under Gas.
 mines, prevention of explosions in, (P.), B., 1035.
 causes of gas outbursts in, B., 50.
 seams, chemical and physical survey of, B., 746.
 importance of heterogeneous character of, B., 50.
 slurry, treatment of, (P.), B., 1000.
 flotation of, B., 999.
 tar. See under Tar.
 Coating compositions, (P.), B., 72, 597, 728, 729, 769, 818, 936, 1107, 1147.
 manufacture of, (P.), B., 685, 984, 1019.
 from cellulose materials, (P.), B., 728.
 from polyvinyl esters, B., 851.
 resinous compositions for, (P.), B., 853.
 diluent for, (P.), B., 642.
 prevention of spontaneous combustion of spray dust from, (P.), B., 685.
 for interiors of vitreous articles, (P.), B., 158.
 anti-fouling, production of, (P.), B., 261.
 cellulosic, (P.), B., 597.
 pigmented, non-caking, manufacture of, (P.), B., 170.
 pyroxylin, (P.), B., 1019.
 quick-drying, manufacture of, (P.), B., 984.
 sheet, flexible, (P.), B., 1006.
 Cobalt, recovery of, from mattes, (P.), B., 1103.
 absorption spectra of solutions containing, A., 544.
 K-absorption edge of, A., 781.
 cathodic sputtering of, in nitrogen, A., 810.
 magnetisation-temperature curves of, A., 790.
 permeability of, A., 790.
 films, magnetic properties of, A., 551.
 magnetisation of single crystals of, A., 1220.
 Cobalt alloys with chromium, A., 41.
 magnetic properties of, A., 1005.
 with chromium and tungsten, (P.), B., 1103.
 with iron, sulphur-resisting, (P.), B., 353.
 with iron and nickel, thermal expansion of, A., 1004.
 magnetic, (P.), B., 353, 638, 932.
 with nickel, electrodeposition of, B., 161, 592.
 with palladium and platinum, magnetic properties of, A., 155.
 with tungsten, hardening of, (P.), B., 1103.
 for cutting tools, (P.), B., 28.
 with tungsten carbide, (P.), B., 302, 639, 932.
 Cobalt bases, isomerism of radicals in, A., 53.
 complex, A., 170.
 Carbonatotetramminocobaltic salts, A., 1116.
 effect of p_H on velocity of decomposition of, A., 314.
 Hydroxypentamminocobaltic persulphate, A., 1140.
 Oxalatotetramminocobaltic salts, A., 1116.
 Tetramminocobaltic salts, complex, A., 184.
 Cobalt compounds, absorption spectra of, A., 1109.
 as driers, B., 404.
 Cobalt salts, magnetic susceptibilities of, A., 412.
 action of sodium hypophosphite on aqueous solutions of, A., 1374.
 complex, absorption spectra of, A., 891.
 Cobalt chloride, formation of mixed crystals of, with strontium and zinc chlorides, A., 901.
 variations of colour of solutions of, A., 302.
 equilibrium of, with zinc chloride, A., 1235.
 hydrolysis of, using dropping mercury cathode, A., 1238.
 and nitrate, equilibrium of water with, A., 684.
 trifluoride, crystal structure of, A., 1359.
 phosphides, A., 922.
 pererrhenate, and its amines, A., 1139.
 sulphate, hydrates of, A., 432.
 sulphate ammoniate, A., 698.
 sulphide, band formation of, in silica gel, A., 909.
 quantitative precipitation of, A., 325.
 orihotitanate, A., 289.
 Cobaltous oxide, heat of formation of, A., 311.
 ammonium sulphate hexahydrate, crystal structure of, A., 1115.
 Cobaltic salts, complex, absorption spectra of, A., 996.
 Cobaltic sulphate, preparation of, and its use as an oxidising agent, A., 449.
 Cobalt organic compounds, complex, containing diacetyldioxime, A., 938.
 Cobalt tetrapyrroline fluosilicate, A., 1381.
 Hexacyanocobaltic acid, and its ethyl alcohol compounds, A., 1382.
 oxonium salt and complex methyl alcohol compounds of, A., 944.
 Cobalt detection and determination:—
 detection of, as caesium cobaltinitrate, A., 329.
 colorimetrically, A., 814.
 in presence of elements of group III, A., 1262.
 in steel, B., 762.
 determination of, electrolytically, A., 1386.
 with dropping mercury cathode, A., 1261.
 alone and in presence of nickel, A., 454.
 Cobalt ores, containing copper and nickel, treatment of, (P.), B., 28.
 Cobaltioxalic acid, potassium salt, photochemical decomposition of, A., 579.
 Cobaltobiscysteine acid, salts of, A., 1403.
 Cocaine, sterilisation of solutions of, B., 696.
 decomposition of solutions of, on keeping or sterilisation, B., 416.
 hydrochloride, adsorptive fixation of, by nerve fibres, A., 388.
 detection of, in narcotic poisons, A., 1171.
 detection and determination of, in presence of novocaine, A., 375.
 and its salts, determination of, A., 856.
 Coccaceæ, A., 394.
 Coccerin, and its acetate, A., 1321.

- Cocculus*, alkaloids from, A., 243.
Cocculus trilobus, phenolic alkaloids of, A., 1313.
Coccus cacti, wax from, A., 1321.
Cochineal insect. See *Coccus cacti*.
Cocoa, and its products, vitamin-A in, A., 988.
 products, preparation of, containing vitamins, (P.), B., 415.
 recovery of alkaloids from, (P.), B., 566.
 See also *Cacao*.
Coconut globulin. See *Cocosin*.
Coconut oil, manufacture of, B., 1060.
 hardened, nutritive value of, A., 867.
 formation of methyl esters of fatty acids from, A., 1271.
 detection of, in Italian butter, B., 461.
Cocosin, molecular weight of, A., 107.
Codeine, ionisation constant of, A., 501.
Codeinone, derivatives of, A., 1313.
Codfish, boned, reddening of, B., 1072.
Codide, chloro- and iodo-, salts of, A., 1077.
Codling moth. See *Moths*, codling.
Cod-liver oil, spectra of, A., 529.
 fluorescence of, A., 658.
 conductivity of, A., 658, 1443.
 emulsification of, B., 223.
 production of emulsions of, (P.), B., 32.
 emulsions of, as substitute for milk, A., 760.
 darkening of, in presence of iron, B., 210.
 bromides of unsaturated acids of, A., 380.
 antirachitic potency of, A., 1465.
 and irradiated ergosterol as antirachitic agents, A., 1197.
 toxic effects of, in relation to vitamin-B, A., 271.
 effect of, in diet of calves, A., 1451.
 on calcium metabolism in chicks, A., 658.
 commercial, colour-test values of, B., 70.
 reactions of, B., 551.
 antimony trichloride reaction for, A., 269.
 determination of vitamin-A in, A., 1196.
Co-enzyme, action of, A., 1455.
Coffee, B., 462.
 grinding of, (P.), B., 514.
 treatment of, to improve taste, etc., (P.), B., 992.
 filtration of infusions of, with "Absorbo" filters, B., 1071.
 filtration of caffeine and roasting toxins from infusions of, (P.), B., 178.
 removal of astringent taste of, B., 513.
 preparation for removal of injurious constituents from, B., 860.
 rôle of pectase in fermentation of, A., 1331.
 trigonelline in, B., 740.
 production of cereal substitutes for, (P.), B., 273.
 "decaffeinated," determination of caffeine in, B., 1153.
 Guatemala, trigonelline from, A., 886.
 malt, determination of maltol in, colorimetrically, B., 316.
 raw, active substance from, A., 776.
 raw and roasted, determination of trigonelline in, B., 652.
 determination of caffeine in, B., 609.
 determination of citric acid in, B., 1071.
Coffee beans, removal of astringent flavour from, (P.), B., 696.
Coffee extract, determination of caffeine in, B., 860.
Coffee pods, effect of gases from, on furnace walls, B., 21.
Coffeinum natrium benzoicum, B., 610.
Cohesion, A., 422, 1358, 1360.
Coins, silver Greek, genuine and forged, microstructure of, B., 445.
Coke, structure of, B., 282.
 "melting" of coal during formation of, B., 573.
 production of, (P.), B., 575, 576, 830, 872.
 furnaces for, (P.), B., 285.
 from carbonaceous fuels, (P.), B., 914.
 utilisation of by-products from, (P.), B., 331.
 production of gas and, in intermittently operated oven chambers, (P.), B., 1082.
 machines for grading or screening of, (P.), B., 916.
 cooling of, and production of nitrogen-hydrogen mixture, (P.), B., 662.
 by quenching, (P.), B., 962.
 dry cooling of, B., 324.
 quenching of, with ammoniacal liquor, B., 790.
 apparatus for quenching and conveying of, (P.), B., 579.
 apparatus for separation of, from quenching water, (P.), B., 333.
 desulphurisation of, B., 956.
 influence of dry and wet cleaning of coal on, B., 913.
 determination of after-coking heat of, B., 660.
Coke, determination of hardness of, B., 428.
 determination of porosity of, B., 912.
 formation of fractures in, B., 373.
 reactivity of, B., 660, 999, 1032.
 properties in relation to, B., 1032.
 influence of iron compounds on, B., 999.
 effect of ash on reactivity and combustibility of, B., 870.
 evolution of gases from, B., 747, 828.
 formation of carbon disulphide from hydrogen sulphide and, B., 51.
 blast-furnace, reducing power of, B., 1081.
 evaluation of, B., 870.
 brown-coal, briquetting of, B., 660.
 catalysis of hydrogen sulphide oxidation by, B., 293.
 compressed low-temperature, B., 427.
 high-grade lump, production of, from coal, (P.), B., 102.
 high- and low-temperature, formation of, B., 617.
 incrustated, activity of, (P.), B., 573.
 Japanese, effect of rate of heating on properties of, B., 96.
 metallurgical, reactivity of, B., 6.
 mid-temperature, friability of, B., 6.
 oven, production of, B., 229.
 powdered, product from, (P.), B., 148*.
 reheated, evolution of gas from, B., 1080.
 semi-, production of, (P.), B., 377.
 chamber ovens for, (P.), B., 143, 329.
 small, gasification of, B., 373.
 strong coherent, production of, from brown coal, B., 5.
 sampling of, B., 956.
 portable apparatus for, B., 660.
Coke breeze, B., 142.
 utilisation of, in Trefois producer, B., 5.
Coke fines, utilisation of, in Upper Silesia, B., 5.
Coke ovens, (P.), B., 8, 189, 378, 525, 792, 871, 957, 1036.
 accessories for, (P.), B., 874.
 doors for, (P.), B., 710, 872.
 heating of, with hot gases, (P.), B., 525.
 heating flue for, (P.), B., 143.
 heating systems for, (P.), B., 872.
 levelling bars for, (P.), B., 962.
 recording-devices for, (P.), B., 1082.
 regulation of gas supply to, (P.), B., 530.
 recovery of heat from, (P.), B., 189.
 utilisation of sensible heat of coke and distillation gases in operation of, B., 747.
 discharging of, (P.), B., 916.
 removal of distillation products from, (P.), B., 143.
 cooling of coke discharged from, (P.), B., 708.
 treatment of effluents from, (P.), B., 908.
 use of gas from, for boiler heating, B., 745.
 removal of smoke from, (P.), B., 830.
 with corrugated walls, (P.), B., 470.
 horizontal, charging of, with rammed coal cakes, (P.), B., 1085.
 regenerative, checker blocks for, (P.), B., 751.
 gas-reversing device for, (P.), B., 11.
 retort, (P.), B., 8, 101, 143, 232, 830, 871, 1082.
Coke-oven gas. See under *Gas*.
Coke-oven liquors, determination of thiocyanates in, B., 373.
Coking chambers, horizontal, doors for, (P.), B., 193.
Coking materials, moulding of, (P.), B., 1084.
Coking plants, economy in steam consumption in, B., 1000.
Colchicine, detection of, in plants, A., 778.
Cold, absorption machines for production of, (P.), B., 183.
Cold cream, production of, (P.), B., 307.
Collagen, structure of, A., 245.
 structure of fibres of, B., 505.
 X-ray study of, B., 555.
 crystal structure of, A., 551.
 effect of trypsin on isoelectric point of, A., 1178.
 absorption and swelling of, in acid pickling solutions, B., 358.
 relation between swelling and proteolysis of, A., 655.
 combination of, with dyes, B., 1065.
 enzymic digestion of, A., 1456.
 action of pancreatin on, A., 654, 1331; B., 732.
 diketopiperazines from, A., 1178.
 antigenic properties of, A., 379.
Collagenase, A., 1456.
Collards, Georgia, effect of sodium luminal on growth of roots of, A., 662.
Collodion membranes. See under *Membranes*.

- Compounds**, classification of, A., 287, 788, 1357.
 principles of genetic formation of, A., 444, 581.
 stability of, A., 1222.
 fusion curves of binary systems forming, A., 1127.
 aliphatic. See Aliphatic compounds.
 aromatic. See Aromatic compounds.
 complex, electrometric formation of, A., 823, 1148.
 stability of, in aqueous solution, A., 921.
 conjugated, A., 460, 1356, 1397.
 co-ordination, A., 1110.
 Raman spectra of, A., 1353.
 inorganic. See Inorganic compounds.
 molecular. See Molecular compounds.
 organic. See Organic compounds.
spiro-Compounds, A., 1415.
Compressibility of liquids, A., 1363.
 cubic, A., 1363.
Compressors, centrifugal, (P.), B., 183.
Compton effect, A., 889.
 theory of, A., 781.
 primary wave-length in, A., 1346.
 breadth of lines in, A., 405.
 multiple scattering in, A., 277.
Concentration apparatus, (P.), B., 521.
 for solutions, (P.), B., 1030.
Conchicine, oxidation of, photochemically, A., 969.
Concrete, (P.), B., 159.
 mixing of, under vacuum, (P.), B., 658.
 mixing machines for, (P.), B., 721.
 properties of, B., 974.
 changes in dimensions of, under pressure, B., 974.
 effect of temperature on strength of, B., 159.
 resistance of, to chemical action, B., 760.
 treatment of, (P.), B., 885.
 to render acid-proof, (P.), B., 634.
 surface treatment of, (P.), B., 590.
 colouring of, by spraying with water paints, (P.), B., 680.
 hydraulic lime in, B., 721.
 destruction of, by sulphate solutions, B., 493.
 action of water containing carbon dioxide on, B., 634.
 production of cold glaze for, (P.), B., 159.
 proofing composition for, (P.), B., 493.
 waterproofing of constructions of, (P.), B., 542.
 soundness test for aggregates of, B., 22.
 bituminous, (P.), B., 1096.
 manufacture of, (P.), B., 975.
 cement, standardisation of tests for mortar and, B., 974.
 of high strength, low permeability, and low shrinkage, B., 973.
 light, production of, (P.), B., 761.
 porous, manufacture of, (P.), B., 249.
 retrogression of, B., 679.
 reinforced, B., 396.
 waterproof, manufacture of, (P.), B., 1012.
Concrete bricks. See under Bricks.
Condensation of vapours, B., 1.
 and polymerisation, A., 68.
Condensation apparatus, (P.), B., 183.
 for mixed vapours, (P.), B., 789.
Condensers, (P.), B., 955.
 for gases, (P.), B., 425.
 for low-temperature evaporation, A., 58.
 electrical, (P.), B., 305, 306.
 dielectric for, (P.), B., 167, 640.
 sealing compositions for, (P.), B., 726.
 Liebig, use of asbestos shields for distillation flasks with, A., 1388.
 reflux, A., 704, 1388.
 stirrer, A., 1263.
Condistillation. See under Distillation.
Conductometer, A., 816.
Condurango bark, percolation of, B., 89.
Confectionery, preservation of, (P.), B., 565.
 use of plant lecithin in, B., 87.
Confectionery pastes, detection of foreign seed kernels in, B., 414.
Congo acid sols, formation of, A., 37.
 solubility of, in neutral salts, A., 426.
Congo-red, effect of gelatin and salts on, A., 798.
 as a test for amyloidosis, and its excretion, A., 758.
Conifers, effect of fertilisers on growth of, B., 39.
 seasonal change in catalase content of leaves of, A., 130.
Conifers, Italian, cotton for nitration from, B., 532.
 Washington, leaf oils of, B., 274, 416.
Coniferyl alcohol, A., 1278.
Coniine hydrochloride, distribution and excretion of, A., 1329.
 toxicological detection of, A., 1329.
Constants, universal, values and inter-relationships of, A., 143.
Constitution, chemical, determination of, by means of diazo-methane, A., 853.
 and absorption spectra, A., 144, 544, 1052.
 and Raman effect, A., 284.
 and mechanical double refraction of liquids, A., 286.
 and rotatory power, A., 231, 848, 962, 1160.
 and paramagnetic properties, A., 25.
 and boiling point, A., 25.
 and colour, A., 835, 955.
 and the parachor, A., 26, 287.
 and physiological action, A., 650, 764, 1190.
 and bactericidal activity, A., 1054.
 and specificity, A., 860.
 and trypanocidal activity, A., 106.
Contact apparatus, counter-current, (P.), B., 371.
Containers, for corrosive materials, (P.), B., 522.
 metallic, prevention of corrosion of, (P.), B., 1029.
 growth of living organisms in, A., 652.
 tinplate, corrosion of, by food products, B., 591.
Contraceptives, spermicidal power of, A., 1329.
Converters, for bessemerising, (P.), B., 254.
Cooking, binding materials in, A., 39.
Coolers, (P.), B., 322.
Cooling agents, (P.), B., 140.
Cooling apparatus, A., 705; (P.), B., 182, 517, 702.
 for distillates, etc., (P.), B., 1030.
 rotary drum, (P.), B., 48.
 tower, (P.), B., 279.
 concrete, construction of, (P.), B., 788.
 water, (P.), B., 423.
Cooling curves, photography of, A., 58.
Cooling power, measurement of, B., 950.
Co-ordination, A., 547.
 and residual affinity, A., 234, 1168.
Co-ordination numbers and partitioning of space of compounds, A., 1000.
Copal, optical activity of, B., 126.
 determination of acid value of, B., 260.
 agatho-, treatment of, (P.), B., 818.
Copal oil, Congo, A., 484.
Copper, manufacture of, from its chloride, (P.), B., 638.
 from bituminous shale ores, (P.), B., 353.
 extraction of, by cyanide solution from oxidised ores, B., 544.
 deposition potential of, in complex solutions of cuprous halides, A., 1371.
 electrodeposition of, and anode sludge formation, A., 1135.
 on bismuth, A., 1135.
 in presence of gelatin, A., 1249.
 from tartaric acid chloride solutions, A., 187.
 in sheets, (P.), B., 121.
 refining of, (P.), B., 256, 1102.
 refining and working of, (P.), B., 207.
 electrolytic refining of, using complex salts of cuprous chloride, B., 1100.
 pyrometallurgical refining of, (P.), B., 353.
 effect of impurities on, B., 494.
 and its alloys, hardener for, (P.), B., 593*.
 work-hardening capacity and elongation properties of, B., 1055.
 and its alloys, casting of, (P.), B., 847.
 moulds for casting of, (P.), B., 639.
 effect of cold-stretching on plasticity of, at high temperatures, B., 929.
 flux for welding of steel and, (P.), B., 847.
 brittleness of, B., 1014.
 and its alloys, physical testing of, in thin strips, B., 1056.
 spectrum of, A., 664, 887, 1103.
 shape of K line in, A., 1205.
 absorption spectra of solutions containing, A., 544.
 arc spectrum of, A., 6, 136.
 K-absorption spectrum of, A., 993.
 K-series spectrum of, A., 887.
 effect of chemical combination on X-ray spectra of, A., 994.
 ionised, multiplets in spectrum of, A., 6.
 atomic scattering powers of, A., 3.

Copper, diffraction of electrons by, A., 11.
m/e for free electrons in, A., 1106.
Hall effect of, A., 672.
electrical conductivity of, B., 253.
temperature coefficient of electrode potential of, A., 801.
anodic behaviour of, A., 432.
effect of strain on magnetic susceptibility of, A., 551.
melting of, by means of magnesite in furnaces at Krasny Vybort-jets, B., 1056.
furnaces for, (P.), B., 890.
and its compounds, free energy of, A., 567.
adsorption of hydrogen on, A., 1365.
solubility of, in milk, B., 495.
in silver, A., 794.
ammonium solutions, colloidal nature of, A., 424.
miscibility of lead and tin with, B., 928.
crystallisation of, from fused cuprous chloride, A., 432.
coarse crystalline, manufacture of, (P.), B., 547.
preparation of colloidal suspensions of, (P.), B., 1140.
equilibrium of, with silver and oxygen, A., 1235.
rectifying action and catalysis with mixtures of cuprous oxide and, A., 1247.
corrosion of, B., 204.
and influence of sulphur dioxide thereon, B., 763.
by gasolines and motor benzols, B., 1000.
and its alloys, by salt solutions, B., 398.
oxidation of, A., 438.
in reverberatory furnace refining, B., 494.
effect of moist lithopone on, B., 204.
action of sulphuric acid on, A., 581.
recovery of, from its ores by flotation, (P.), B., 724.
removal of, from its alloys, (P.), B., 302.
coating of iron or steel with, (P.), B., 163, 1101.
firebars and staybolts of, B., 252.
manufacture of sheets of, (P.), B., 208.
photography on, B., 515.
oligodynamic action of, A., 1334.
effect of, on growth of plants, B., 733.
in plants and animals, and in nutrition, A., 1186.
content of, in human organs, A., 1321.
in relation to hygiene, B., 320.
and its alloys with zinc, finely divided, preparation of, (P.), B., 981.
powdered feathery, production of, (P.), B., 547.
specific reagents for, A., 813.
Copper alloys, X-ray spectra of, A., 671.
thermal conductivity of, A., 157.
heat treatment of, (P.), B., 980.
oxidation of, B., 1014.
containing sulphur, (P.), B., 812.
age-hardened, effect of strain and heat treatment on, B., 544.
analysis of, B., 809.
with aluminium, A., 1364; (P.), B., 354.
age-hardening of, B., 351.
with aluminium and nickel, B., 1055.
with aluminium and silicon, B., 494.
with arsenic, X-ray structure of, A., 418.
with cadmium and zinc, crystal structure of, A., 896.
with chromium and nickel, (P.), B., 120.
with gold, A., 1118, 1364.
structure of, A., 414.
formation and structure of, A., 1224.
elastic modulus of, A., 900.
action of nitric and sulphuric acids on, A., 1253.
with iron and silicon, manufacture of, (P.), B., 353.
with lead, A., 1224.
rate of corrosion of, by sulphuric acid, B., 206.
with lithium, thermal and X-ray analysis of, A., 296.
with magnesium, A., 1224.
with manganese, A., 296.
with manganese and nickel, (P.), B., 207.
non-corrodible, (P.), B., 548*.
with manganese and silver, A., 1364.
with manganese and zinc, (P.), B., 764.
with nickel, (P.), B., 547.
magnetic properties of, A., 1220.
thermal conductivity of, B., 117.
elastic limit of, B., 1014.
lattice constants of, A., 414.
with nickel and silver, (P.), B., 208.

Copper alloys with nickel and zinc, (P.), B., 165*.
paramagnetism of, A., 673.
with palladium, melting of, (P.), B., 120.
with palladium and silver, (P.), B., 933.
with phosphorus, rolling of, B., 494.
with silicon and zinc, (P.), B., 812, 890.
with silver, A., 296, 556.
with silver and with zinc, spectroscopic analysis of, A., 702.
with tin, A., 418, 676.
 β -phase in, A., 33.
crystal structure of, A., 414.
equilibrium of, A., 900.
effect of phosphorus and oxygen on, B., 887.
with tin and zinc, (P.), B., 724, 812.
with titanium, quenching of, (P.), B., 724.
age-hardening of, B., 253, 1100.
Copper bases :—
Hexamminocupric perchlorate, A., 49.
Pentamminoquocupric perchlorate, A., 49.
Tetramminoquocupric perchlorates, A., 49.
Triamminocupric perchlorate, A., 49.
Copper compounds, co-ordination, A., 1379.
Copper salts as light filters, A., 1109.
equilibrium of cupric and cuprous ions in solutions of, A., 432.
for removal of hydrogen cyanide from coke-oven gas, B., 573.
role of, in haemoglobin regeneration and in reproduction, A., 1319.
Copper carbide, formation of, in acetylene cylinders, B., 6.
chlorides, heat of formation of, A., 42.
chromite, use of, as catalytic agent, A., 598.
halides, carbonyls of, A., 581.
hydride, band spectrum of, A., 664.
solid anhydrous, A., 1379.
iodate, activity coefficient of, in aqueous salt solutions, A., 309.
solubility of, in aqueous salt solutions, A., 1365.
oxide rectifiers. See under Electric rectifiers.
peroxides, formation of, in non-aqueous media, A., 1252.
quantoxide, A., 695.
perhenate, and its amines, A., 1139.
selenides, formation of, by reduction of selenites, A., 809.
preparation of, A., 813.
selenite, determination of, in presence of copper selenides, A., 813.
thiosulphates, complex, A., 49, 181.
Cupric perchlorate and its dihydrate, A., 49.
chloride, equilibrium of dissociation of, A., 684.
and sulphate, magnetic susceptibility of, A., 788.
hydroxide, blue, stabilisation of, A., 444.
oxide, electromotive behaviour of, A., 1129.
equilibria of ferric oxide, sulphur trioxide, water, and, A., 800.
removal of, from surfaces, (P.), B., 294.
hydrated, promoter action of magnesium oxide in catalysis by, A., 576.
action of neutral salt solutions on, A., 1139.
sols, protection of, by sodium salts of hydroxy-acids, A., 1008.
electrodes. See under Electrodes.
sulphate, production of, from Ural copper ores, B., 1047.
use of hot flue gases in, B., 756.
separation of, from iron and zinc sulphates, (P.), B., 538.
density of acid solutions of, A., 302.
chemical reactions in crystals of, A., 1252.
pentahydrate, susceptibility of, at low temperatures, A., 411.
dehydration of, A., 1132.
hydrolysis of, A., 1010.
composition of deposit formed on zinc immersed in, A., 49.
action of, on lipase, A., 984.
ammoniate, A., 698.
Cuprous chloride, condensation products of, with thiocarbamide and formaldehyde, A., 1398.
iodide, oxidation of, and its conversion into potassium iodide, A., 1022.
mercuri-iodide, crystal structure of, A., 1359.
oxide, properties of, A., 409, 667.
conductivity of, A., 1112.
effect of heat treatment on electrical conductivity of, A., 1354.
diffraction of electrons by thin films of, A., 1207.

- Copper** :—
 Cuprous oxide, rectifying action of, A., 1355.
 lattice constant of, A., 549, 671.
 scattering power of copper and oxygen in, A., 1105.
 photo-electromotive force in crystals of, A., 999.
 kinetics of reduction of, A., 438.
- Copper organic compounds with hydroxy-acids**, A., 49.
 complex, with aminoacetates, A., 1126.
 containing diacetyldioxime, A., 938.
- Copper mercaptides**, and their reaction with carbon disulphide, A., 1033.
 tetrapyrroline fluosilicate, A., 1381.
- Copper detection, determination, and separation** :—
 detection of, A., 327, 927.
 with 2:7-diaminofluorene, A., 1045.
 microchemically, A., 701.
 determination of, A., 247, 454, 1025.
 electrolytically, in presence of platinic salts, A., 702.
 iodometrically, A., 187.
 microchemically, A., 701 ; B., 920.
 with salicylaldehyde, A., 813, 927.
 volumetrically, A., 813.
 in mixtures with arsenic, iron and mercury, A., 1142.
 in biological material, A., 990.
 in blood, microchemically, A., 378.
 in Bordeaux-lead arsenate mixtures, B., 1047.
 in cyanide solutions, A., 1025.
 in dairy products, B., 316.
 in fabrics, B., 196.
 in organic matter, A., 1202.
 electrolytically, in steel, B., 637.
 in textiles, B., 196.
 in green vegetables, colorimetrically, B., 43.
 and its separation from cadmium, A., 813.
 and its separation from zinc, A., 1260.
 separation of, from antimony, electrolytically, A., 57.
 from arsenic and antimony, A., 701.
 from cadmium, A., 1025.
 from molybdenum in ores, B., 887.
- Copper ions**, complex, determination of constitution of, A., 910.
 containing nitrogen, A., 788.
- Copper mattes**, treatment of, (P.), B., 1015.
- Copper-nickel mattes**, treatment of, (P.), B., 812.
 bessemerising of, (P.), B., 765.
- Copper ores**, treatment of, (P.), B., 120.
 reagent for concentration of, by flotation, (P.), B., 546.
 chlorination roasting of, B., 351.
 leaching of, (P.), B., 639.
 containing cobalt and nickel, treatment of, (P.), B., 28.
 containing gold, cyanidation of, B., 544.
 oxide, flotation of, B., 1056.
 oxidised, concentration of, (P.), B., 164.
 treatment of, previous to flotation, (P.), B., 447.
 siliceous, froth flotation of, (P.), B., 1058.
 sulphide, metallurgy of, (P.), B., 301.
 treatment of, (P.), B., 1103.
 containing iron, roasting of, (P.), B., 1102.
- Copper wire**, manufacture of, (P.), B., 208.
 coating of, with insulating compositions, (P.), B., 893.
 sealing of, to glass, (P.), B., 812.
 hard-drawn, orientation in, A., 416.
 tinned rubber-coated, testing of tinning of, B., 452.
- Copra**, quality of, B., 551.
 Malayan, B., 641.
- Coprochlorin**, A., 633.
- Coprohaematin**, A., 633.
- Coprohaemin tetramethyl ester**, A., 633.
- Coproporphyrin**, A., 853.
- Coproporphyrin I**, derivatives of, A., 633.
- Coproporphyrin III**, synthesis of, and complex salts of its esters, A., 747.
- Coproporphyrin IV**, and its salts and derivatives, A., 854.
- Coprorhodin II**, synthesis of, and its methyl ester, A., 747.
- Coramine**, A., 740.
- Corchogenin**, and its dibromide, A., 337.
- Corchoric acid**, A., 337.
- Corchorin**, constitution and derivatives of, A., 337.
- Corchoritin**, from jute seeds, constitution of, and its derivatives, A., 1420.
- Cordierite**, pleochroic giant haloes in, A., 410.
- Cores**, foundry, oils for binding of, B., 749.
- Coriander oil**, B., 31.
 preparation of linalool from, A., 492.
 Hungarian, B., 823.
- Cork**, A., 713, 1036.
 insulating, development of moulds on, B., 369.
 Corn, production of cellulose from stalks of, (P.), B., 479.
 sweet, fertilisation of tomatoes, musk melons and, in a 3-year rotation, B., 1067.
- Corn borer**, European, lethal power of insecticides against, B., 691.
- Corn silk**, non-nitrogenous constituents of, A., 1341.
- Corn syrup**, effect of rate of boiling on sulphur dioxide in mixtures of sugar and, B., 1115.
- Corncockle**, detection of, in flour and bread, B., 219.
- Cornea**, mitogenetic radiation of epithelium of, A., 1083.
- Cornstalks**, manufacture of insulating board from, B., 340.
- Corona**, lines in spectrum of, A., 784.
- Corpus luteum**, test for potency of extracts of, A., 1195.
- Corrosion**, A., 46 ; B., 206.
 theories of, A., 691 ; B., 298, 681.
 physical chemistry of, A., 1013.
 topochemistry of, A., 1374.
 rate of, A., 691.
 influence of stress on, A., 917.
 effect of composition of water on, B., 656.
 origin of iron in products of, due to London atmosphere, B., 1142.
 of metals, A., 574 ; B., 1099.
 relation of moisture in rust to critical humidity for, B., 762.
 effect of sodium chloride solutions on, B., 637.
 of metal pipes, etc., B., 637.
 of underground water pipes and cables, detection of, B., 762.
 of vessels in viscose silk industry, B., 116.
 protection of metals from, B., 25 ; (P.), B., 980.
 cadmium as treatment against, B., 496.
 testing resistance to, B., 204, 591.
 atmospheric, of metals, B., 763.
- Corticinic acid**, A., 713.
- Cortin**, A., 879.
- Corydalis**, alkaloids from, A., 854.
- Corydalis caseana**, toxicity of, A., 764.
- Corydines**, synthesis and constitution of, A., 1311.
- Corylus avellana**, pollen membranes of, A., 536.
- Corynebacterium diphtheriae**, growth and toxin production of, A., 877.
- Corynberine**, and its diethyl ether, A., 1311.
- Cosmetics**, detection of isopropyl alcohol in, B., 413.
- Cosmical constant**, value of, A., 1209.
- Cotton**, dry weight of, B., 477.
 influence of potash sources and chlorine content of fertilisers on yield of, B., 456.
 moisture relations of, B., 152.
 influence of humidity on elastic properties of, B., 477.
 dyeing of. See under Dyeing.
 adsorption of acid dyes by, A., 1232.
 kieren of, B., 1046.
 determination of degree of mercerisation of, B., 800.
 immunisation of, (P.), B., 674.
 elimination of *Aspergillus* from, B., 477.
 recovery of, from waste tyres, B., 730.
 ageing of, contained in rubber goods, B., 15.
 nature of dust in carding rooms for, B., 319.
 sampling of, for determination of fibre properties, B., 582.
 determination of tendering of, B., 387.
 for nitration, from Italian conifers, B., 532.
 bleached, determination of oxycellulose in, B., 879.
- Cotton bolls**, constituents of, A., 882.
- Cotton boll worm**, aeroplane dusting in control of, B., 269.
- Cotton cloths**, examination and analysis of, B., 1087.
 protection of, against alkaline liquors, (P.), B., 198.
- Cotton fabrics**, action of detergents on, B., 628.
 mercerisation of, (P.), B., 923.
 mildewed, detection of fungus mycelium in, B., 152.
- Cotton fibres**, structure of, A., 828.
 properties of, B., 625.
 fireproofing and spinning of, (P.), B., 838.
 kieren of, B., 1006.
 treatment of, for use in filtration, (P.) B., 837.
- Cotton goods**, identification of fungi causing mildew in, B., 581.
 bleached, detection of oxycellulose in, B., 836.
- Cotton plants**, effect of salts on transpiration and water requirements of, A., 882.

- Cotton plants**, concentration of soil solution in relation to leaf tissue fluids of, A., 399.
 fertiliser requirements of black soils for, B., 899.
 effect of nitrogen fertilisers on, B., 734.
 effect of high soil moisture and lack of soil aëration on fruiting of, B., 989.
 nitrogen content of, B., 775.
 transport of phosphorus, potassium and calcium in, A., 533.
- Cotton wilt**, effect of potash fertilisers on, B., 312.
- Cotton yarns**, Indian, tests on, B., 625.
- Cottonseed**, effect of carbohydrates on milling value of, B., 683.
 production of cellulose from hulls of, (P.), B., 879.
 production of feeding-stuffs from, B., 944.
 extraction of oil from, (P.), B., 501.
- Cottonseed cake**, determination of fats and moisture in, B., 258.
- Cottonseed meal**, effect of, on growth of rats, A., 761.
 as food for cattle, A., 1185.
 as supplemental feed for range cattle, B., 272.
- Cottonseed oil**, effect of kapok oil on Halphen test for, B., 894.
- Couepia grandiflora**, fatty oil from seeds of, B., 124.
- Couepic acid**, A., 1034.
- Coulometers**, copper, A., 1144.
 sodium, A., 1263.
- Coumalic acid**, methyl ester, derivatives of, from reaction with maleic anhydride, A., 1427.
- Coumalin**, derivatives of, from reaction with maleic anhydride, A., 1427.
- Coumaric acid**, azo-derivatives of, A., 1409.
- Coumarilyl cyanide**, A., 233.
- Coumarin**, formation of coumarone from, A., 233.
 nucleus, introduction of arsenic into, A., 1316.
- Coumarin**, 6-thio-*p*-amino-, toluoyl derivative, A., 1423.
- Coumarins**, preparation of, by condensation of phloroglucinol and resorcinol with ethyl acetoacetates, A., 962.
 synthesis of, from phenols, A., 962, 1303, 1304.
 substituted, conversion of, into benzopyrylium salts, A., 1070.
- Coumarin series**, A., 1070.
- Coumarin-4-acetic acids**, reactivity of methylene group in, A., 1069.
- 8-Coumarinazo-6-aldehydocoumarin**, A., 1409.
- Coumarinazo-*o*-coumaric acid**, A., 1409.
- Coumarinazo-7:8-dihydro-4-methylcoumarin**, A., 1409.
- Coumarinazodimethylalanine**, A., 1409.
- Coumarinazodimethylcoumarins**, A., 1409.
- Coumarinazo-7-hydroxy-4-methylcoumarin**, A., 1409.
- Coumarinazo-6-iodocoumarin**, A., 1409.
- Coumarinazo-4-methyl- α -naphthacoumarin**, A., 1409.
- Coumarinazoresorcinol**, A., 1409.
- Coumarin-3-carboxyanilide**, A., 1156.
- Coumarin-3-carboxytoluidides**, A., 1156.
- Coumarinyl-6-carbamic acid**, esters of, A., 1161.
- Coumarinyl-6-carbamide**, A., 1161.
- Coumarinyl-6-carbimide**, and its derivatives, A., 1161.
- s-6-Coumarinylphenylcarbamide**, A., 1161.
- Coumarone**, formation of, from coumarin, A., 233.
- Coumarone series**, A., 737.
- Coumaryl 6-isocyanate**. See **Coumarinyl-6-carbimide**.
- Coumarylacetic acid**, A., 233.
- Coumaryl-2-aldehyde**. See **2-Aldehydocoumarone**.
- Coumarylcarbinol**, *p*-nitrobenzoate of, A., 233.
- Coumarylglyoxylic acid**, amide of, A., 233.
- Coumaryl-6-thiocarbamic acid**, ethyl ester, A., 1423.
- Conmaryl-6-thiocarbamide**, A., 1422.
- Coumaryl-6-thiocarbimide**, A., 1422.
- Covalency**, A., 788.
- Cows**, dairy, calculation of rations for, A., 868.
 feeding of maize silage to, A., 761.
 comparative value of kale and maize silage for, B., 1070.
 feeding of, on rubber-seed meal, B., 313.
 mineral feeding experiments with, B., 313.
 calcium assimilation by, A., 1451.
 calcium phosphate as mineral supplement for, B., 176.
 calcium and phosphorus balance in, A., 515, 869, 1451.
 skim milk as food for, A., 868.
- Co-enzyme**, A., 985.
 physiological action of, A., 764.
 and adenylic acid, A., 1191.
- Crabs**, arginine-phosphoric acid in metabolism of muscle of, A., 513.
- Cracca virginiana**, insecticidal properties of, B., 990.
- Cracking**, destructive hydrogenation in, B., 523.
 liquid-phase, design of plant for, B., 707.
- Cranberries**, chemistry of, A., 1339.
- Crandallite**, A., 818.
- Crayons**, manufacture of, (P.), B., 170.
- Cream**, preparation of, suitable for whipping, (P.), B., 1026.
 viscosity of, B., 1025.
 separation of, B., 512.
 treatment of, (P.), B., 945.
 clotting of, in relation to external conditions and properties of milk, B., 739.
 manufacture of solid preparations of, (P.), B., 823.
 artificial, manufacture of, (P.), B., 317.
 cold. See **Cold cream**.
 ice-. See **Ice-cream**.
 milk-and-egg. See **Milk-and-egg cream**.
 natural or artificial, treatment of, (P.), B., 992.
 skin-protective, (P.), B., 515.
 sour, neutralisers for, B., 272.
 synthetic, preparation of, (P.), B., 1154.
 whipped, apparatus for manufacture of, (P.), B., 364.
 detection of gelatin in, B., 133.
 detection of viscogen in, B., 220.
- Creatine**, origin of, in the organism, A., 647.
 excretion of, as a function of endogenous metabolism of nitrogen, A., 255.
 influence of thyroid substances on, in liver and muscle, A., 268.
 effect of diet and nephrectomy on, in rats, A., 762.
 in human muscle, A., 756.
 in invertebrates and vertebrates, A., 1178.
 detection of, A., 246.
- Creatinine**, origin of, in the organism, A., 647.
 excretion of, in dietary treatment of obesity, A., 1181.
 in blood, A., 247.
 detection of, A., 246.
- Creatinuria**, in relation to acidosis and muscle-glycogen, A., 112.
- Creosol**, 3:5-dinitrobenzoyl derivative, A., 837.
- Creosote**, insulation of working tanks for, B., 785.
 brown-coal-tar, determination of, with naphthalenediazonium chloride, B., 187.
 light, from beech wood, B., 660.
- Creosote oil**, B., 142.
 ageing phenomena in, B., 574.
- Cresol**, recovery of, from aqueous solutions, (P.), B., 150*.
 determination of, in cresol soap solutions, B., 610.
- o*-Cresol**, benzylation of, A., 83.
- m*-Cresol**, pure, preparation and properties of, A., 1288.
 bromination of, A., 1047.
 mercury compound of, (P.), B., 698.
- m*-Cresol**, nitro-, constitution of, A., 952.
 5-nitro-2-amino-, acetyl derivative, A., 855.
- p*-Cresol**, condensation of, with benzyl alcohol, A., 1047.
 preparation of coumarins and 1:4-pyrones from, A., 1303.
- p*-Cresol**, *m*-amino-, preparation of, electrolytically, A., 1152.
 3-bromo-5-amino-, alkyl- and arylsulphonyl derivatives, and their bromo-, chloro-, chloronitro- and nitro-derivatives, A., 1288.
 5-chloroamino-, acetyl derivative, A., 747.
 6-nitro-3-amino-, and its acetyl derivative, A., 1434.
p-thio-, reaction of, with anils, A., 91.
- Cresols**, volatility of, when heated on water-bath, B., 874.
 thermal decomposition of, B., 467.
 separation of, A., 1288.
p-chloroallyl ethers, A., 952.
 3:5-dinitrobenzoyl derivatives, A., 837.
 determination of, A., 375; B., 327.
- Cresol-blue**, atmospheric dealkylation of solutions of, A., 1310.
- o*-Cresol**/tetrabromosulphonophthalein, A., 221.
- o*-Cresoldisulphonylglycine**, A., 124.
- m*-Cresoldi(sulphonyl-*dl*-leucine)(sulphonyl-*dl*-leucylglycine)**, A., 124.
- p*-Cresoldisulphonyl-*dl*-leucylglycine**, A., 124.
- o*-Cresolindophenol**, absorption spectrum of, A., 784.
- o*-Cresol**/tetraiodosulphonophthalein, A., 221.
- m*-Cresol**/trisulphonyl-*dl*-leucine, and its ethyl ester, A., 124.
- o*-Cresotic acid**, and its salts, production and purification of, (P.), B., 1133.
- m*-Cresotic acid**, condensation of, with chloral, A., 1053.
- Critical temperature**, prediction of, A., 675.
 relation between melting and boiling points and, A., 31.

- Crocetin methyl ester**, A., 1067.
Crocodile blood. See under **Blood**.
Crocoite, crystal structure of, A., 550.
Crops, apparatus for artificial drying of, (P.), B., 410.
 rotation experiments with, B., 175, 267.
 nutrient intake and fertiliser requirements of, B., 987.
 yields of, on weakly acid and weakly alkaline soils, B., 604.
 effects of brown coal on growth of, B., 507, 857.
 effect of farmyard manuring on yield of, B., 267, 458.
 relation of soil nitrates to potash fertilisation of, A., 82.
 nitrogen requirements of, B., 507.
 influence of nitrogenous fertilisers on yield of, B., 940.
 effect of increased nitrogen manuring on, B., 605.
 effect of paper mulching of, B., 457.
 effects of potash manuring of, B., 988.
 field, influence of lime on recovery of total nitrogen in, B., 1067.
 forage, calcium content of, and of their soils, B., 409.
Crotonaldehyde, production of, from acetylene, (P.), B., 666.
 condensation products of, with anthrone, A., 1419.
 2:4-dinitrophenylhydrazones, A., 937.
Crotonic acid, α -iodo-, A., 1391.
 β -thiol-, ethyl ester, A., 1398.
Crotonic acids, β -chloro-, differentiation between, by catalytic hydrogenation, A., 934.
9:10-endoCrotonic anhydride-anthracene, A., 849.
isoCrotonolactone, γ -hydroxy-, preparation of, A., 1148.
Crucibles for aluminothermic reactions, (P.), B., 447.
 graphite, manufacture of, (P.), B., 1096.
 illium, effect of, on volatile determinations in coal, B., 229.
 silica, (P.), B., 492.
Cruciferae, oils of, (P.), B., 258.
Crushers, (P.), B., 48, 50*, 228*, 370, 910, 1078.
 cone, (P.), B., 910.
 gyratory, (P.), B., 48, 702.
 hammer, (P.), B., 370, 786.
 jaw, (P.), B., 702.
 single-roll, (P.), B., 786.
Cryogenin, detection of, microchemically, A., 504.
Cryolite, molten, density of, and of its molten mixtures with barium fluoride, B., 717.
Cryoscopy, precision, A., 1008.
Cryostats, A., 1143.
 precision automatic, A., 815.
Cryptopyrrolecarboxylic acid, ethyl ester, A., 240.
Cryptosterol, and its benzoate, A., 1154.
Cryptotoxins, A., 1460.
Crystals, formation and growth of, B., 1029.
 structure of, from powder photographs, A., 1115.
 from magnetic properties, A., 1364.
 from space-groups, A., 1355.
 and diamagnetism, A., 154.
 in relation to melting point, A., 1002.
 of modifications of substances, A., 1356.
 representation of, by Fourier series, A., 26.
 Fourier analysis of, A., 17.
 lattice structure of, A., 1001.
 improvement of eutectic structure of, A., 1005.
 photometer for X-ray analysis of, A., 190.
 table of nomenclature for determination of X-ray structure of, A., 1217.
 photographic examination of, A., 1387.
 arrangement of atoms and ions in, A., 896.
 atomic distances in, A., 411.
 distance between electrons in, and their diameter, A., 278.
 interference of electron spin in, A., 889.
 lattice constants of, A., 1217.
 lattice dimensions of, A., 548, 1217.
 lattice energies of, A., 295.
 lattice transformations in, A., 1218.
 of modifications of substances, A., 788.
 potential and potential energy of space lattices of, A., 18.
 evaluation of Debye-Scherrer diagrams for, A., 1115.
 chemical applications of measurements of, A., 672.
 physics of, A., 1003.
 Raman spectra of, A., 1211.
 Raman effect in, A., 668.
 refractometry of, A., 669.
 reflexion of X-rays by, A., 150.
 scattering of X-rays by, A., 1105.
 transformation of light into heat in, A., 282, 891.
Crystals, orientation of, and forces at faces, A., 1003.
 by means of etch-figures, A., 789.
 reflexion of atoms from, A., 14, 1348.
 diffraction of electrons by, A., 782.
 electric discharge in, in relation to orientation, A., 790.
 mobility in, A., 1212.
 piezo-electricity of, A., 29.
 paramagnetic rotation in, A., 287.
 rotation of, in a magnetic field, A., 673.
 magnetic properties of, A., 791.
 orientation of, in magnetic fields, A., 29.
 superheating of nuclei of, A., 898.
 quantum theory of null-point temperature of, A., 293.
 condensation on, A., 1133.
 velocity of evaporation of, A., 1220.
 transitions of, at high pressures, A., 1220.
 inner adsorption in, A., 421.
 adsorption of solutes by, A., 904.
 adsorption of electrolytes by, A., 1226.
 surface tension of, A., 422.
 kinetics of processes at surfaces of, A., 421.
 quantum mechanics of, A., 407, 665.
 determination of thickness of transparent layers of, A., 413.
 dependence of plasticity of, on temperature, A., 1220.
 deformation of, at high pressure and temperature, A., 1003.
 growth of, A., 1115.
 disappearance of, in isotropic media, A., 1358.
 etchings on, A., 288.
 increase in surface area of, due to etching, A., 1217.
 diminution of fissure hardness in, A., 1360.
 vibration method for determination of strength of, A., 1220.
 types of, of elements, A., 150, 548.
 chemical reactions in, A., 1252.
 with lower refractive index than the mother liquor, A., 902.
 of sparingly soluble substances, growth of, A., 677.
 compressed, radiation from, under high potentials, A., 405.
 concave, X-ray spectra of, A., 781.
 cubic, scattering of X-rays by, A., 896.
 deposited on mica plate, orientation of, A., 150.
 ferro-magnetic, molecular field and atomic order in, A., 154.
 direction of crystallisation of, A., 154.
 anisotropy of magnetisation in, A., 291, 1003.
 homopolar, A., 1115.
 inorganic, internal structure of, A., 18.
 Raman spectra of, A., 146.
 ionic, theory of oriented superimposition of, A., 1217.
 formation of latent images in, A., 784.
 isomorphous, replaceability of atoms and groups in, A., 1363.
 large, manufacture of, (P.), B., 951.
 liquid, X-ray structure of, A., 1116.
 microscopic, apparatus for X-ray examination of, A., 413, 548.
 mixed, formation of, A., 901.
 in molecular lattices, A., 1218.
 equilibria in binary systems of, A., 310.
 separation of traces of substances from, A., 1225.
 segregation in series of, A., 555.
 non-polar, growth and solution of, A., 288.
 oscillating, A., 671.
 piezo-electric. See under **Piezo-electric**.
 photo-luminescent and micro-, infra-red luminescence of, A., 144.
 of rock-salt type, magnetic forces in, A., 154.
 single, absorption of light in, A., 1210.
 diffraction of electrons by, A., 1207.
 magnetisation curve of, A., 551, 791.
 submicroscopic, X-ray examination of, A., 548, 796.
 two-dimensional, A., 1218.
 uniaxial, magnetic rotation of, A., 286.
 optical anisotropy of, A., 287.
 analysis of, A., 413.
Crystal hydrates, A., 1358.
Crystal violet base, compounds of, with hexanitrodiphenylamine and hexanitrotriphenylmethane, A., 618.
Crystalline bodies, apparatus for examination of, with X-rays, (P.), B., 869.
 compounds, stereochemistry of, A., 670.
 water of hydration of, A., 432.
 liquids, X-ray structure of, A., 290, 897.
 chemistry of, A., 898.
 materials, multi-, radial asterism of, A., 1358.

Crystalline salts, inner adsorption in, A., 795, 1121.
 state, A., 1217.
 relation of, to liquid state, A., 288.
 substances, constitutional formulae of, A., 1217.
 See also under Polycrystalline.

Crystallisation, A., 413.
 spontaneous, of supercooled melts and supersaturated solutions, A., 1360.

Crystallisation apparatus, (P.), B., 183, 424, 659*, 788, 868.
 for evaporation under reduced pressure, (P.), B., 322.

Crystallograph, Hilger X-ray, A., 1358.

Cubebin, synthesis of, A., 724.

Cucumbers, greenhouse, control of powdery mildew and red spider on, B., 1150.

Cucumber seeds, citric acid enzyme from, and its use in citric acid determination, A., 519, 1455.

Cucumis citrullus. See Watermelons.

Cucurbita maxima, carotenoids from, A., 1200.

Cucurbitaxanthin, A., 1200.

Cucurbitene, A., 1200.

Culture media, pH of, A., 875.
 containing urea, A., 875.

Cumengite, crystal structure of, A., 671.

Cumenol, β -chloroallyl ether, A., 952.

iso- ψ -Cumenol, derivatives of, A., 1287.

Cuminaldehyde 2:4-dinitrophenylhydrazone, A., 937.

Cummingtonite, optical properties of, A., 594.

Cuprene, B., 796.

α -Cupritartaric acid, neutral salts, A., 49.

Cuprothiosulphates, complex, A., 807.

Curie points, A., 291.

Currents, red and black, effect of potassium salts on, B., 267.

Curtisite from Skaggs Springs, California, A., 192.

Cyanamide, manufacture of, (P.), B., 538.
 action of, as fertiliser, B., 38.
 photochemical colour reaction of, with ferrocyanides, A., 806.

Cyanamides, A., 1019.
 manufacture of, (P.), B., 201.

Cyanidin from quercetin, preparation of, and its derivatives, A., 940.
 chloride, constitution of, A., 1162.
 5-glucoside, and its derivatives, A., 1425.

Cyanine dyes, thio-, preparation of, A., 103.

ψ -Cyanine dyes, containing pyridine or β -naphthaquinoline nuclei, A., 741.

Cyano-compounds, Raman effect and constitution of, A., 545.

Cyanogen, synthesis of, electrically, A., 805.
 absorption and explosion spectra of, A., 19.
 band spectrum of, A., 663, 779.
 ultra-violet absorption spectrum of, A., 1110.
 dielectric constant and dipole moment of, A., 1213.
 radiation of flame from explosion of oxygen and, A., 313.
 kinetics of oxidation of, A., 1131.
 action of, on zinc, A., 1244.
 influence of, on pigment excretion by liver and kidneys, A., 1187.

Cyanogen compounds. Raman spectra of, A., 998.
 toxicity of, to seeds, B., 604.

Cyanogen bromide, preparation of, A., 831.
 reactions of, A., 696.
 chloride, manufacture of, (P.), B., 540.
 halides, manufacture of, (P.), B., 632.
 ultra-violet absorption spectra of, A., 1110.

Hydrocyanic acid, A., 176.
 formation of, in electric discharge, (P.), B., 536.
 from methylamine, A., 831.
 catalytic formation of, A., 577.
 preparation of, by oxidation of ammonium thiocyanate or thiocyanic acid, B., 586.
 production of, B., 1008; (P.), B., 924, 1092.
 from ammonium thiocyanate, (P.), B., 1009.
 physical properties of, A., 1213.
 infra-red absorption spectrum of, A., 667, 1111.
 dielectric constant and dipole moment of, A., 1213.
 isomerism of, A., 1280.
 freezing point of aqueous mixtures of, A., 567.
 adsorption of, by activated charcoal, A., 1120.
 storage and transportation of, (P.), B., 246.
 removal of, from benzol, B., 575.
 conversion of, into ferricyanide, B., 586.

Cyanogen:—

Hydrocyanic acid in plants, A., 401.
 hæmolytic action of, A., 507.
 inhibition of respiration by, A., 639.
 iron content and resistance of the organism to, A., 119.
 fumigation with, (P.), B., 538.
 effect of, on tissue respiration, A., 1454.
 alkali salts, manufacture of, (P.), B., 1139.
 structure of, and their isomorphism with halides, A., 789.
 purification and analysis of, A., 1024.
 cadmium complex salt, composition of, A., 581.
 calcium salt, preparation of, from calcium cyanamide, B., 839.
 complex salts of copper, chromium and nickel, B., 587.
 molybdenum salt, A., 1255.
 nickel salt, constitution of, A., 1369.
 complex rhodium salts of, A., 1141.
 sodium salt, manufacture of, (P.), B., 488.
 reduction of, A., 1246.
 and its salts, detection of, in viscera, A., 1329.
 determination of, in kirsch, B., 218.

Cyanides, Raman spectra of, A., 146.
 solubilities of, A., 1005.
 recovery of, from waste solutions from gold extractions, (P.), B., 803.
 removal of, from waste water, (P.), B., 882.
 uses of, B., 671.
 in metallurgy, B., 671.
 physiological action of, A., 886.
 action of, on respiration of cells, A., 1187.
 poisoning by. See under Poisoning.
 complex, A., 27, 581, 808, 1369.
 magnetic susceptibility and absorption spectra of, A., 292.
 hydrolysis of, A., 1233.

Cyanoic acid, synthesis of, by ammoniacal oxidation of carbon, A., 339.
 alkali salts, manufacture of, (P.), B., 1139.

Cyanates, production of, (P.), B., 157, 201, 925.

Cybotactic groups in organic mixtures, A., 1360.

Cyclanols, secondary, dehydration of, A., 954.

apocyclene, spatial structure of, A., 95.

Cyclic compounds, synthesis of, A., 727, 1052.

isocyclic compounds, halogenation of, (P.), B., 13.

Cycloses, structure of, and their relationship to dextrose, A., 69.

Cylinders, drying, doll-head bearings for, (P.), B., 278.
 steam-heated, (P.), B., 321.
 internally-heated, temperature distribution in, B., 321.

Cymbopogon, oil-bearing species of, from Burma, B., 179.

p-Cymene, A., 475.
 catalytic oxidation of, in the vapour phase, B., 1085.

2-*p*-Cymylhydrazine, salts of, A., 475.

Cysteine, and its derivatives, mechanism of sulphur lability in, A., 1156.
 action of alkali on, A., 76.
 as anticatalyst in oxidation with molecular oxygen, A., 691.
 decomposition of, during irradiation, A., 607.
 oxidation of, spontaneously, A., 718, 1246.
 by living cells, A., 1187.
 arsenic derivatives of, A., 105.
 cobalt complexes of, A., 1403.
 cobaltous derivative, oxidation of, A., 830.
 determination of, A., 108.
 potentiometrically, A., 374.
 in presence of glutathione, A., 831.

Cystine, A., 718.
 and its absorption spectrum, A., 338.
 specific rotation of preparations of, A., 471.
 decomposition of, during irradiation, A., 607.
 reduction of, A., 76.
 action of alkali on, A., 76.
 oxygen consumption in tissues on diet poor in, A., 1325.
 action of beer yeast on, A., 655.
 in bacterial protein, A., 265.
 absorption of, in white rats, A., 647.
 and cystinamine in diet of white rats, A., 1450.
 iron-free, preparation of, A., 718.
 determination of, A., 108.
 potentiometrically, A., 374.

L-Cystine, optical rotation of, A., 77.
 alkali salts of, A., 338.

Cystolite, lead and uranium content of, A., 594.

Cytisine, A., 1171.
 detection of, in plants, A., 243.
 Cytochrome, A., 756.
 importance of, in cell respiration, A., 656.
 Cytochrome C, absorption spectrum of, A., 1191.

D.

Dactylin, A., 1100.
 Daidzein, and its derivatives, A., 1304.
 Daidzin, and its derivatives, A., 1304.
 Dairies, use of metals in, B., 363.
 Dairy products, pasteurisation of, (P.), B., 1154.
 Dakin's solution, proposed modification of, B., 839.
Dalbergia parviflora, essential oil from, B., 698.
 Danburite, crystal structure of, A., 415.
 from Obira, Japan, A., 1266.
 Dandelion, xanthophyll from, A., 1299.
Danthonia spicata, composition of consecutive cuttings of, A., 274.
 Dates, Arizona, vitamin content of, B., 415.
Datura stramonium (thorn apple), poisoning by seeds of, A., 120.
 Dauricine, A., 243.
 Deaminocaseinogen, A., 752.
 Debye-Hückel theory, A., 168.
 α -parameter of, A., 685.
 Decadiene, from dehydration of $\beta\delta\zeta$ -trimethylheptane- $\beta\delta$ -diol, A., 1032.
 Decahydrochamazulene, A., 1302.
 Decahydroguaiazulene, selenium and sulphur derivatives, A., 1301.
trans-Decahydronaphthalenes, synthesis of, A., 1302.
 1:4:5:8-*diendoxo*Decahydronaphthalene-9:10-dicarboxylic acid, and its esters, A., 1427.
 Decahydro-1:8-naphthyridine, and its salts and derivatives, A., 1309.
 Decamethylene dichloride, A., 1043.
 Decamethylene- $\alpha\kappa$ -di- μ -thiocarbamide, salts, A., 1043.
 Decamethyl- β -methylcellotrioid, A., 941.
 Decane, $\alpha\epsilon$ -dibromo-, dinitrile from, A., 67.
 Decane- $\omega\omega'$ -diamidine dihydrochloride, A., 1043.
 Decarboxyriassic acid, A., 490.
 derivatives of, A., 1415.
 $\Delta\gamma$ -Decinene, A., 61.
 n -Decoic acid, preparation of, A., 1395.
 Decoic acid, ϵ -hydroxy-, formation of, by ozonolysis of $\Delta\kappa$ -undec-enyl acetate, A., 1272.
 Decomposition, chemical, theory of, A., 1358.
 double, in absence of solvents, A., 41, 568, 800.
 Decyl alcohol, and iodide, A., 1094.
 Decyl alcohol, κ -chloro-, and its phenylurethane, A., 1032.
 Decyl hydrogen peroxide, α -hydroxy-, A., 1268.
 Degras, analysis of, B., 816.
 Degreasing apparatus, using volatile solvents, (P.), B., 169.
 Deguelic acid, and its acetyl derivative, A., 357, 1065.
 Deguelin, A., 357, 491, 1065, 1298.
 toxicity of, A., 870.
 Dehrnite, A., 818.
 Dehydracetic acid, hydrogenation of, over nickel, A., 693.
*iso*Dehydracetic acid, derivatives of, from reaction with maleic anhydride, A., 1427.
 Dehydration agents, preparation of, (P.), B., 1093.
 Dehydration apparatus, for substances suspended in water, (P.), B., 94.
 Dehydrators, (P.), B., 423.
 Dehydroangustione, constitution of, A., 487.
 Dehydro-*m*-chlorobenzylidenedi- β -naphthol, A., 493.
 Dehydrocholic acid, bromo- and hydroxy-derivatives, A., 352.
mono- and *tetra*-bromo- and *mono*- and *di*-iodo-, and their derivatives, A., 956.
 Dehydroapocholeic acid, dioxime, A., 841.
 Dehydrodeguelin, A., 357.
 formation of 2:4:5-trimethoxybenzoic acid from, A., 841.
 Dehydrodeguelone, A., 357.
 Dehydrodeoxycholic acid, bromination of, and its tribromo-derivatives, A., 352.
 Dehydrodeoxycholic acid, *mono*- and *di*-bromo-, A., 1293.
di- and *tri*-bromo-, derivatives of, A., 956.
 Dehydrodihydroteneol, A., 1065.
 Dehydrodihydroteneolic acid, and its acetyl derivative, A., 1065.
 Dehydro- β -dihydroteneone, A., 491.
 Dehydrodihydrotoxicarol, A., 1065.

5:14-Dehydro-10:11-dimethoxy-1:2:3:4:6:7-hexahydrobenzpyrido-colinium salts, A., 365.
 Dehydroergosterol, and its acetate, A., 724.
 Dehydroergosteryl acetate maleic anhydride, A., 840.
 Dehydrogenase, A., 389, 390.
 action of adenosinephosphoric acids on, A., 122.
 effect of narcotics on, A., 983.
 dextrose, A., 1189.
 Dehydrodihydroxy- β -dihydroteneonic acid, A., 491.
 Dehydrolithocholic acid, and its derivatives, A., 957.
 Dehydrophosphoribide α , methyl ester, A., 1075.
 Dehydroteneol, A., 1065.
 7-Dehydrothebenone, A., 501.
 Dehydro-*l*-thebenoneketone-(7)-furan, A., 1172.
 Dehydrotoxicarol, and iodo-, A., 1065.
 Dehydrouranic acid, and its methyl ester, A., 1154.
 Delphinium seeds, determination of oil and alkaloids in, B., 697.
 Demethoxydihydrosinomenine, and its oxime, and 1-bromo-, A., 1172.
 De-*N*-methyldemethoxydihydrosinomenine, A., 501.
 De-*N*-methylsinomenine, 1-bromo-, and its methiodide, A., 1171.
 De-*N*-methylsinomenine, 1-bromo-, A., 1171.
 Democritus, A., 929.
 Density (*specific gravity*), determination of, of solids, A., 455, 456.
 method of reading in, with Bunsen-Schilling apparatus, A., 815.
 recorders for, (P.), B., 426.
 separation of materials of different, (P.), B., 50*.
 in gaseous and liquid states, A., 1004.
 of liquids, apparatus for determination of, A., 592.
 of semi-solids, determination of, A., 1027.
 at absolute zero, A., 546.
 low-temperature, of elements, A., 895.
 maximum, temperature of, of aqueous solutions, A., 560.
 Dental caries in rats on adequate diet, A., 1083.
 Dental cements, B., 114.
 manufacture of, (P.), B., 975.
 Dental plates, casting of metals, etc. for, (P.), B., 449.
 Dentistry, electric furnaces for use in, (P.), B., 641.
 resinous compositions for use in, (P.), B., 643.
 Deoxodemethoxydihydrosinomeninedihydromethine, A., 1172.
 Deoxo- α -isostrophanthidic acid, A., 826, 827.
 Deoxy-acids, formation of, from unsaturated lactones, A., 1270.
 Deoxybenzoin, absorption spectra and constitution of derivatives of, A., 144.
 benzeneazo- and *p*-nitro-phenylhydrazones, A., 476.
 Deoxybenzoin, *o*-hydroxy-, oxime and salts of, and 3-nitro-6-hydroxy-, and its benzoate, A., 1070.
 Deoxybenzoins, unsymmetrically substituted, structure of, A., 732.
 Deoxybilianic acid, and its dibromo-derivative, A., 352.
 β -Deoxybilianic acid, bromo-, and 6-hydroxy-, and its derivatives, A., 841.
 Deoxybilienic acid, bromo-, and its trimethyl ester, A., 352.
 Deoxycinchonine, derivatives of, with β -phenylpropionic acid, A., 1077.
 Deoxycodine, A., 1077.
 Deoxycodines, and their salts, A., 1077.
 Deoxydihydrocinchonine, derivative of, with β -phenylpropionic acid, and its derivatives, A., 1076.
 2-Deoxy-*d*-gluconic acid, and its derivatives, A., 71.
 Deoxyisoperiplogonic acids, and their methyl esters, A., 1297.
 Deoxyphyllloerythrin, and its salts and methyl ester, A., 496.
 synthesis of, A., 1431.
 Deoxyquinine, derivative of, with β -phenylpropionic acid, A., 1077.
 Deoxyisorotenol, A., 1065.
 Deoxyisorotenone, A., 1298.
 Deoxy- α -isostrophanthidonic acid, methyl ester, A., 827.
 Deoxytetrahydrosantonin, A., 227.
 Deoxy- α -tetrahydrosantonin, A., 490.
 Dephlegmation apparatus, (P.), B., 521, 868.
 Derric acid, structure of, A., 1415.
 constitution of, A., 490.
 Derris, insecticidal value of some constituents of, B., 268.
 Derris root, active principle of, A., 490, 847.
 rotenone content of, B., 514.
 Derritol, cleavage of, A., 227.
 Desert varnish, A., 332.
 Desiccation apparatus, (P.), B., 322, 518.
Desmarestia viridis, occurrence of malic acid in, A., 884.

- Detectors, A., 409.
- Detergents, (P.), B., 259, 817.
 preparation of, (P.), B., 202*, 1092.
 manufacture of, (P.), B., 489, 667.
 action of, on cotton and linen fabrics, B., 628.
- Detonating caps, production of, (P.), B., 516.
- Detonation, determination of velocity of, by Dautriche's method, B., 783.
 transmission of, A., 689.
- Detonators, manufacture of, (P.), B., 784.
 testing of, B., 224.
 blasting, (P.), B., 784.
 electric, (P.), B., 225.
 lead azide, testing of, B., 418.
- Deuterioerythroporphyrin, and its copper salt and derivatives, A., 967.
- Deuterioerythroporphyrin II, and its derivatives, A., 102.
- Denteroporphyrin, methyl ester, A., 967.
- Deuterorhodin, ethyl ester, A., 967.
- Developers. See Photographic developers.
- Devil's shoestring. See *Cracca virginiana*.
- Dew point of gases, determination of, B., 745.
- Dextrin, thermal decomposition of, A., 422.
 effect of feeding with, on metabolism and respiration, A., 979.
- Dextrins, action of amylase on, A., 1089.
 diastatic, autohydrolysis of, A., 337.
- Dextrose (d-glucose; grape-sugar), structure of, A., 939.
 production of, from starch, (P.), B., 901.
 effect of amino-acids on optical rotation of, B., 693.
 alterations in rotation and mutarotation of, A., 1275.
 crystalline, manufacture of, (P.), B., 177*.
 speed of crystallisation of, B., 1115.
 relationship of cyclases to, A., 69.
 relationship of methylglyoxal to alkaline degradation of, A., 70.
 oxidation of, by bleaching powder, B., 821.
 by potassium permanganate, in acid solution, A., 1038.
 oxidation product of, A., 1275.
 action of animal charcoal on, in presence of amino-acids or aromatic amines, A., 70.
 action of emulsion on propyl alcohol solutions of, A., 874.
 action of sodium hydrogen sulphite on, at high temperatures, A., 1038.
 condensation of, with o-anisidine, o-phenetidine and o-toluidine, A., 1149.
 with p-toluidine, A., 1039.
 effect of ultra-violet irradiated sea-water on fermentation of, A., 1251, 1333.
 formation of cellulose from, by action of *Acetobacter xylinum*, A., 1401.
 assimilation of, A., 1086.
 renal threshold for, A., 1183.
 tolerance of, in relation to alkali deficit, A., 259.
 compounds of, with alkali molybdates, A., 939.
 with ethyl aminoacetate and glycylglycine ester, A., 943.
 hydrazones of, A., 938.
 phosphates, and their derivatives, A., 63, 933.
 determination of, biologically, A., 265.
 electrometrically, A., 538.
 microchemically, in sugar solutions and in urine, A., 939.
 in blood, A., 1320.
 in honey, B., 1115.
 in presence of levulose and glycine, B., 693.
 in peptone water, A., 1193.
 precipitation reagent for, in urine, A., 1179.
- Dextrose-oxidase, A., 653.
- Dhupa. See *Vateria indica*.
- Diabetes (*glycosuria*), respiratory quotient in, A., 1324.
 anaesthesia in, A., 1446.
 artichokes in diet for, A., 1180.
 colloidal osmotic pressure of blood in, A., 253.
 decrease of glutathione in blood in, A., 759.
 acid-soluble phosphorus of blood in, A., 1083.
 distribution of sugar in blood in, A., 253.
 effect of ergotamine on blood-sugar in, A., 977.
 effect of insulin on dialysis of blood-sugar in, A., 879.
 dextrose-lactic acid cycle in, A., 512.
 transformation of fats in, A., 1180.
 fat metabolism in, A., 1324.
 gastric acidity in, A., 645.
 relation of, to glycaemia, A., 1183.
 sugar content of skin and muscle in, A., 758.
- Diabetes, in children, hypoglycaemia in, A., 758.
 curare, in frogs, A., 1087.
 "insulin," A., 528.
 pancreatic, tissue metabolism with insulin in, A., 1461.
 phloridzin, dextrose tolerance in, A., 260.
 action of insulin on, A., 128.
- Diabetes insipidus, A., 977.
 creatinine excretion in, A., 977.
- Di-3-acenaphthenyl ether, A., 82.
- 2:2'-Diacenaphthenylmethane, 3:3'-diamino-, A., 82.
- Diacenaphthyl disulphide, and 5:5'-dibromo-, A., 611.
- 3:3'-Diacenaphthylsulphone, and its oxidation derivative, A., 611.
- 2:6-Diacetoglucosylrufiopin, imonium salt and hydrate of, A., 940.
- 2:3-Diacetoglucosyanthraquinones, A., 826.
- Diacetone alcohol. See isoHexan- β -ol- β -one.
- 4:8-Diacetoresorcinol, derivatives of, A., 96.
- 1:4(5)-Diacetoxy-8-acetoglucosyanthraquinone, A., 826.
- 1:3-Diacetoxyanthranil acetate, A., 356.
- 5:8-Diacetoxy-1:6-dimethylnaphthalene, A., 80.
- β -Diacetoxy- α -ethoxypropane, A., 600.
- Diacetoxymercuribenzyphenols, A., 1078.
- Diacetoxymethoxypropanes, A., 600.
- Di-2-acetoxy-1-naphthyl disulphide, A., 724.
- α -p-Diacetoxy- α -phenylpropane, β -bromo-, A., 953.
- Diacetyl. See Dimethyl diketone.
- Diacetylchitobionic acid, A., 1402.
- Diacetylchitobiose, A., 1402.
- Diacetyldenteroporphyrin dimethyl ester, derivatives of, A., 496.
- 1:9-Diacetylspirodihydantoin, A., 853.
- 5:7-Diacetyl-9:10-dihydro- α ' β '-naphthapentindole, A., 366.
- Diacetyldihydrotoxicarol, A., 1065.
- 3:3'-Diacetyl-2:2'-dimethyldichromone, A., 1305.
- 3:6-Diacetyl-2:5-dimethylpyrazine, A., 747.
- 4:4'-Diacetyldiphenylarsinic acid, A., 1316.
- Diacetylenylbenzenes, A., 946.
- Diacetylfluorenes. See Fluoryldimethyl ketones.
- Diacetyl- ψ -glucal α -methyl-lactolide, A., 336.
- Diacetylhederaetulin, and its dihydro-derivative, A., 1159.
- Diacetylmesitylene, tetrabromo- and tetrachloro-cyano-, and dicyano-, A., 833.
- 1:9-Diacetyl-3-methylspirodihydantoin, A., 853.
- 1:5-Diacetylnaphthalene, 1:5-dibromo-, A., 1164.
- 2:4-Diacetylphenol, A., 845.
- Diacetylrrhamnose anhydride, A., 69.
- Diacetyltetrahydrobrucine and its salts, A., 1312.
- 3:3'-Di(β -acetylvinyl)diphenyl, 4:4'-dihydroxy, A., 1056.
- 4:4'-Dialkoxydiphenyls, additive products of, with nitric acid, A., 723, 954.
- 5:6-Dialkoxyquinolines, 8-amino- and -nitro-, (P.), B., 1003.
- N-Dialkylaminoalkylaminoaldehydes, aromatic, and their derivatives, (P.), B., 622.
- Dialkylbarbituric acids, effect of structure on narcotic action of, B., 1121.
- Dialkylethylene derivatives, unsymmetrical, preparation of, A., 1031.
- Dialkylhydroxylamine, formation of, from hydrastine N-oxide, A., 969.
- Diallyl-p-phenetidine, and its pyrolysis, A., 81.
- Dialuric acid, effect of iron and cyanides on spontaneous oxidation of, A., 1246.
- Dialysers, (P.), B., 520.
 continuous, A., 593.
- Dialysis, B., 227.
 with membranes, A., 1007.
 See also Electrodialysis.
- Diamagnetic susceptibility, influence of geometric isomerism on, A., 788.
- Diamagnetism in relation to field strength and crystal structure, A., 551.
 and charge distribution, A., 551.
 and strain, A., 551.
 of colloids, A., 1000, 1357.
 of free electrons, A., 278, 411.
 of liquids, A., 1357.
 of mixed liquids, A., 900, 1000, 1223.
 anomalous, A., 154.
- Diamidine, dicyano-, chlorate and perchlorate, A., 339.
- m- and p-Diamines, aromatic, acyl derivatives of, (P.), B., 711.
- Diamino-acids, effect of heat on, A., 1078.
- Diamond, formation of, A., 1028.

- Diamond, Raman spectrum of, A., 145.
valency electrons in, A., 1356.
with quartz intergrowths, A., 1265.
- Disoamylidipyridylum dibromide, molecular salt of, with diphenylamine, A., 740.
- Diamylose, A., 1276.
- 2:2-Dianilino-3-anilocyclopentan-1-one, 4:5-dibromo-, A., 478.
- 1:4-Dianilino-6:7-benzanthraquinone, A., 1064.
- p*-Dianilinobenzene, reaction of, with triphenylmethyl chloride, A., 955.
- ω -Dianilinobenzyl alcohol, *o*-amino-, sulphonyl derivative, and its derivatives, A., 1049.
- $\beta\beta'$ -Dianilinodiethylsulphone, A., 1394.
- Di-*p*-anilinodiphenylmethane, A., 632.
- 4:4'-Dianilino-2-hydroxytriphenylmethane, A., 632.
- 1:4-Dianilino-2-keto-1-methyl-1:2-dihydronaphthalene, 6-bromo-, A., 216.
- 4:4'-Dianilino-3:4-methylenedioxytriphenylmethane, A., 632.
- 2:4-Dianilinomethylquinoline, 3-chloro-, and its derivatives, A., 236.
- 2:4-Dianilinoquinazoline, and its salts, A., 1431.
- Dianilinoquinazolinedicarboxylic acids, derivatives of, A., 1431.
- Di-*p*-anilinodiphenylmethane, A., 632.
- Di-*p*-anilinotriphenylmethanedisulphonic acid, A., 632.
- 4-*o*-Dianisidino-6-methoxy-2-methylquinoline, and its acetyl derivative, A., 372.
- Dianisyl methylene ether, A., 1047.
- 2:5-Dianisylbenzoquinone, 3:6-dibromo- and -dihydroxy-, A., 1062.
- Di-*p*-anisylboric acid, A., 244.
- $\alpha\alpha$ -Di-*o*-anisylethyl alcohol, A., 947.
- Dianisylidene-embelin, A., 1061.
- 9-(Di-*p*-anisylmethyl)fluorene, 9-hydroxy-, A., 1059.
- 9:9-Di-*p*-anisylphenanthrene, A., 1059.
- Dianisylthionaphthylacetic acid, and its barium salt and methyl ester, A., 361.
- Dianthraquinone, di-1-chloro-, additive compound of, with anti-mony chloride, A., 1061.
- 2:3:2':3'-tetrahydro-, A., 1294.
- 1:1'-Dianthraquinonyl, 2:2'-dibromo-, A., 732.
- 2:2':3:3'-tetrahydroxy-, and its tetra-acetyl derivative, A., 357.
- 2:2'-Dianthraquinonyl, 1:4:4'-trihydroxy-, 3:1'-oxide. See 3:4:7:8-Diphthaloyldiphenylene oxide, 2:6:9-trihydroxy-.
- 1:4:1':4'-tetrahydroxy-, manufacture of, (P.), B., 579.
- 1:1'-Dianthraquinonyl-4:4'-dicarboxylic acid, and its di-1-menthyl ester, A., 1063.
- $\alpha\beta$ -Di-3-anthraquinonylethyl alcohol, β -amino- $\alpha\beta$ -di-(1-chloro-2-hydroxy-) and β -amino- $\alpha\beta$ -di-1:2-dihydroxy-, A., 226.
- Dianthraquinonylethylenes, dihydroxy-, derivatives of, A., 226.
- s*-Dianthraquinonylmethylcarbamide, di- α -2-hydroxy-, A., 226.
- $\alpha\beta$ -Di-2-anthraquinonylthioethylene, $\alpha\beta$ -di-1-amino-, A., 749.
- Dianthrone, di- and tetra-hydroxy-, and their acetyl derivatives, A., 356.
- Dianthrone dyes, vat, manufacture of, (P.), B., 339.
- Diaphragms, colloidal, for electrolysis, A., 174.
- Diarachidonogadolein, bromide, A., 602.
- Diarrhoea, changes in blood and plasma in dehydration of infants in, A., 510.
- 2:2'-Diarsinodiphenyl ether, A., 1173.
- 4:4'-Diarsinodiphenyl disulphide, 2:2'-dinitro-, A., 1434.
- Diaryl compounds, complex, high-boiling, production of, (P.), B., 238.
- Diarylaminecarboxylic acids, *m*-hydroxy-, manufacture of, (P.), B., 1041.
- Diarylcarbamidedicarboxylichydroxyarylamides, (P.), B., 238.
- Diarylcyclohexanes, 4:4'-diamino-, manufacture of oxamic acids of, (P.), B., 239.
- $\alpha\beta$ -Diarylhydrazines, *as*-substituted, acetylation of, A., 476.
- Diarylmethanes, hydroxy-, halogenated compounds of, (P.), B., 238.
- sulphonation products of, (P.), B., 238.
- Diarylmethane dyes, synthesis of, A., 955.
- Diatase, action of, on flour, B., 363.
- in germinating barley, A., 1089.
- in blood and skin, A., 1447.
- cholam, A., 1089.
- malt and pancreatic, evaluation of preparations of, B., 314.
- pancreatic, activation and stabilisation of, by hæmatin, A., 1190.
- from wheat, A., 653.
- determination of, in honey, B., 740.
- Diatoms, new mounting medium for, A., 380.
- in heat insulating materials, structure and properties of, B., 657.
- Diatomite, analysis and use of, in pharmacy, B., 223.
- Diazoacetic acid, ethyl ester, reactions of, in benzene, A., 1015.
- with trichloroacetic acid in hydrocarbon solvents, A., 1375.
- ω -Diazo-4-acetoxy-3:5-dimethoxyacetophenone, A., 1424.
- Diazoaminobenzene, formation of aminoazobenzene from, A., 951.
- Diazocamphane, A., 358.
- Diazo-compounds, spectroscopy and photochemistry of, A., 892.
- photolysis of, A., 1379.
- chemistry of, A., 722.
- oxidation by means of, A., 476.
- coupling reactions of, with aldehyde hydrazones, A., 1156.
- formation of hydrazones from, A., 211.
- aliphatic, A., 218.
- aromatic, A., 1409.
- optically active, A., 358.
- sensitive to light, A., 722, 752.
- Diazo-dyes, manufacture and application of, (P.), B., 875.
- Diazo-hydrates, A., 345, 951.
- constitution and reactions of, A., 82, 1047.
- Diazo-hydroxides. See Diazo-hydrates.
- Diazo-1-ketodihydrobenzenes, 5-bromo- and 3:5:6-trinitro-, A., 478.
- Diazoles, complex, colour of, A., 1308.
- Diazomethane, thermal decomposition of, A., 916.
- methylation of alcohols by, A., 206.
- action of, on piperonal, A., 731.
- with unsaturated compounds, A., 1310.
- use of, in determination of constitution, A., 853.
- Diazomethane series, action of compounds of, on thio-esters, A., 84.
- Diazonaphtholsulphonic acid, action of light on, and its salts, A., 722.
- 1-Diazo- β -naphthol-4-sulphonic acid, and 6-bromo- and 6-chloro-, A., 951.
- bromination of, A., 1047.
- Diazonaphtholsulphonic acids, and their anhydrides, A., 1409.
- Diazonium salts, action of, with ketone phenylhydrazones, A., 476.
- on silk, B., 484.
- on unsaturated compounds, A., 722.
- 5-Diazo-3-sulphosalicylic acid, and its salts, A., 482.
- Diazotates, normal, constitution of, A., 614.
- anti*-Diazotates, and their use for preparation of azo-dyes, B., 963.
- 3:4:5:6-Dibenzacridine methosulphate, A., 98.
- 1:2:5:6-Dibenzanthracene, derivatives of, A., 612.
- 2:3:6:7-Dibenzanthracene-9:10-diyl, and its derivatives, A., 209, 833.
- 9:10-*endo*-2:3:6:7-Dibenzanthracene- $\alpha\beta$ -succinic anhydride, A., 1292.
- 1:2:6:7-Dibenzanthraquinone, *mono*- and *di*-hydroxy-, A., 1063.
- Dibenzanthraquinones, and *mono*- and *di*-hydroxy-, A., 1064.
- iso*Dibenzanthrone, manufacture of chlorination products of, (P.), B., 150.
- Dibenzanthrones, manufacture of, (P.), B., 1041.
- iso*Dibenzanthrones, manufacture of, (P.), B., 1041.
- n*- and *iso*-Dibenzanthrones, bromo-, and chloro-, manufacture of, (P.), B., 338.
- Dibenzanthrone dyes, production of, (P.), B., 798.
- from leuco-esters, (P.), B., 338.
- alkali-soluble, production of, (P.), B., 623.
- vat, manufacture of, (P.), B., 14, 58, 338, 386, 476, 669, 753, 919, 966.
- production and use of, (P.), B., 435.
- containing halogens, manufacture of, (P.), B., 798, 1041.
- iso*Dibenzanthrone dyes, vat, manufacture of, (P.), B., 966.
- containing chlorine and bromine, manufacture of, (P.), B., 1134.
- 10:10'-Di-(2:3-benz-9-anthranyl) ether, A., 1064.
- 1:2:1':2'-Dibenzdianthryl, A., 612.
- 2:3:6:7-Dibenz-1:4-dihydroanthracene, A., 209.
- 5:6:5':6'-Dibenzo-*NN'*-dihydro-1:2:1':2'-anthraquinoneazine, A., 226.
- 4:5:8:9-Dibenzo-10-keto-3-hydropyrene, A., 732.
- 2-Dibenzoylaminopyridine, 4-chloro- and 4-iodo-, A., 362.
- 2:5-Dibenzoyl-1:4-di(trichloromethyl)benzene, A., 624.
- Dibenzoyldinaphthylene oxide, A., 844.
- 4:4'-Dibenzoyldiphenyl ethers, *p*-diamino-, and their derivatives and *p*-dinitro-, A., 487.

- 4:4'-Dibenzoyldiphenyl solenide, *p*-dinitro-, A., 487.
 Dibenzoylfurazan, zinc of, A., 1157.
 2:4-Dibenzoyl-6- β -glucosidylphloroglucinaldehyde, A., 1424.
 2:4-Dibenzoyl-6-*O*-methylphloroglucinaldehyde, A., 1424.
 Dibenzoylnaphthalenes, A., 92.
 Dibenzoylphenylchloroglyoxime, A., 223.
 2:4-*O*-Dibenzoylphloroglucinaldehyde, A., 1424.
 4:4'-Dibenzoylstilbene, A., 92.
 2:4-Dibenzoyl-6-tetra-acetyl- β -glucosidylphloroglucinaldehyde, A., 1424.
 Dibenzopyrenequinones, halogenated, manufacture of, (P.), B., 290, 337, 667.
 $\alpha\beta$ -Di(benzthiophanthrenquinonyl)ethylene, A., 1164.
 Dibenzthioxin, 2:8-dibromo-, A., 739.
 Dibenzyl. See *s*-Diphenylethane.
p-Dibenzylaminophenol, benzoate of, A., 837.
 Dibenzyl-*n*-butylsulphonium mercuritriiodide, parachor and constitution of, A., 26.
s-Dibenzylcarbamide, *di-p*-amino-, diacetyl derivative, *di*(2:4-*di*-hydroxy)-, and *di*(nitrohydroxy)-, A., 614.
 3:5-Dibenzyl-*o*-cresol, A., 83.
 2:5-Dibenzyl-*p*-cresol, benzoyl derivative, A., 1047.
 9:10-Dibenzyl-1:2:5:6-dibenzanthracene, A., 612.
 1:2-Dibenzyl-1:2-dihydro- α -chrysapinacolin, A., 1157.
 1:2-Dibenzyl-1:2-dihydrochrysene, 1:2-*di*hydroxy-, A., 1157.
 9:10-Dibenzyl-9:10-dihydro-1:2:5:6-dibenzanthracene, 9:10-*di*hydroxy-, A., 612.
pp'-Dibenzylidenedihydrazino-*o''*-hydroxytriphenylmethane, and its triacetyl derivative, and 2:2'-*di*hydroxy-, A., 223.
pp'-Dibenzylidenedihydrazino-*p''*-methoxytriphenylmethane, A., 223.
pp'-Dibenzylidenedihydrazino-*p''*-nitrotriphenylmethane, A., 223.
 Dibenzylidene-3:3'-dimethoxyflavanone, A., 96.
 Dibenzylidene-embelin, A., 1061.
 Dibenzylidenestyracitol, A., 1033.
 3:3-Dibenzylindolenine, derivatives of, A., 1073.
 3:3-Dibenzylindolenine-2-carboxylic acid, A., 1073.
 3:3-Dibenzylindolin-2-one, and its bromo-derivative, A., 1073.
 Dibenzyl ketone, oximino-, and its salts, A., 1157.
 Dibenzylmaleic acid, and its anhydride, A., 956.
 Dibenzylmalonic acid, A., 1269.
 3:3-Dibenzyl-2-*m*-nitrostyrylindolenine, and its tetrahydrochloride, A., 1073.
 4:4'-Dibenzylxydiphenyl, and *d*initro-, A., 723.
 3:3-Dibenzyl-2- β -phenylethylindolenine, and its salts, A., 1072.
 Dibenzyl-*n*-propylsulphonium mercuritriiodide, parachor and constitution of, A., 26.
 2-(2':4'-Dibenzyl)pyridine, 2':4'-diamino-, A., 1165.
 Dibenzylpyridines, and their salts, A., 1072.
 3:3-Dibenzyl-2-styrylindolenine, and its derivatives, A., 1072.
 Dibenzylsuccinic acids, and their anhydride, A., 483.
 Dibenzylidithiolethane *tetrabromide*, A., 1049.
 Dibiphenylenedibenzylethane, A., 725.
 Dibiphenylenediethylethane, A., 724.
 Dibiphenylenedimethylethane, A., 725.
 Dibixane, A., 1267.
s-Dibornylacetylene, *di*hydroxy-, synthesis and hydrogenation of, A., 358.
s-Dibornylcarbamide, nitroso-derivative, A., 358.
s-Dibornylethane, *di*hydroxy-, A., 358.
s-Dibornylethylene, *di*hydroxy-, A., 358.
 2:5-Di-(*p*-*n*-butoxyphenyl)benzoquinone, A., 1062.
 Dibutylacetylcholine chlorophosphate, A., 943.
 Dibutylamine hydrogen sulphide, A., 1042.
NN'-Di-*n*-butyl-5:5'-arseno-2:2'-pyridone, A., 1315.
 9:10-Di-*n*-butyl-1:2:5:6-dibenzanthracene, A., 612.
 9:10-Di-*n*-butyl-9:10-dihydro-1:2:5:6-dibenzanthracene, 9:10-*di*-hydroxy-, A., 612.
 Disobutylene, composition of, A., 1148.
 Disobutylenes, ozonised, catalytic action of, on polymerisation, A., 597.
 Di- $\alpha\beta$ -isobutylenediaminepalladium salts, A., 1167.
 Di- $\alpha\beta$ -isobutylenediamineplatinum salts, A., 1167.
 Dibutylidene-embelin, A., 1061.
 Di-*tert*-butylnaphthalenes, A., 341.
 2:5-Dibutylpyridine, and its chloroplatinate, A., 364.
 $\alpha\alpha'$ -Dicarbonyl-3-methylcyclopentane-1:1-diacetic acid, and its ω -imide, A., 727.
 Dicarbonyl-*o*-acetophenoneoximes, A., 1416.
 Dicarbonyl-*o*-aminobenzaloxime, A., 1416.
 Dicarbonyl-*o*-aminobenzaloximes, A., 1416.
 $\beta\beta'$ -Dicarbethoxydiethylamine hydrochloride, A., 1071.
 [Di-(3-carbethoxy-4:3'-dimethyl-4'-ethyl)pyrromethene]phenylmethane, *di*-5-hydroxy-, A., 1421.
 Di-(4-carbethoxy-3:5-dimethylpyrrol) ketone, and its derivatives, A., 1168.
 2:4-Dicarbethoxy-3-methylpyrrole-5-acrylic acid, A., 102.
 2:4-Dicarbethoxy-3-methylpyrrole-5-propionic acid, A., 102.
 2:6-Dicarbethoxyphenol, 4-nitro-, A., 1062.
 3:6-Dicarbethoxy-2:4:7-trimethyl-5- β -carboxyethyltripyrrene, 1:8-*di*hydroxy-, A., 1421.
 1:8-Dicarbethoxy-2:4:7-trimethyl-5-ethyl-3:6-dicarboxyethyltripyrrene, A., 968.
 3:5-Dicarbethoxy-4:3':5'-trimethyl-4'-ethylpyrromethene, and its hydrobromide, A., 102.
 3:6-Dicarbethoxy-2:4:7-trimethyl-5-ethyltripyrrene, 1:8-*di*hydroxy-, A., 1421.
 3:5-Dicarbethoxy-4:5:3'-trimethylpyrromethene-4'-propionic acid hydrobromide, A., 102.
 1:8-Dicarbethoxy-2:4:7-trimethyl-3:5:6-triethyltripyrrene, A., 968.
 Di-(4- β -carbomethoxyethyl-3:5-dimethylpyrrol)ketone, A., 1168.
 3:6-*endo*- $\alpha\beta$ -Dicarbomethoxyethylenhexahydrophthalic acid, methyl ester, A., 1427.
 2:5-Dicarbomethoxycyclopentane-3:4-dione-1(2')-*spiro-trans*hexahydrohydriene, and its semicarbazone, A., 728.
 α -Di-3-carboxyanthraquinonylmethylcarbamide, *di*- α -2-hydroxy-, A., 226.
 Di-*p*-carboxybenzoylbenzene, A., 719.
 α -Di-(3-carboxybenzyl)carbamide, *di*-4-hydroxy-, A., 614.
N-(α -Dicarboxy-4'-butenyl)phthalamic acid, A., 220.
cis-1:2-Dicarboxy-1-hydroxycyclopropane-3(2')-*spiro-trans*hexahydrohydriene, and its anhydride, A., 728.
 $\alpha\alpha'$ -Di-(5-carboxy-2-methoxyphenyl)ethane, $\beta\beta$ -dichloro-, and its derivatives, A., 1054.
 1:2-Dicarboxy-1-methoxycyclopropane-3(2')-*spiro-trans*hexahydrohydrienes, and their derivatives, A., 728.
 1:1'-Di(carboxymethyl)-5:5'-arsono-2:2'-pyridone, A., 1316.
 Di-(5-carboxy-3-methyl-4-ethylpyrrol)ketone, and its methyl ester, A., 1168.
 $\alpha\beta$ -Di-(3-carboxy- α -naphthyl)ethane, *di*-4-hydroxy-, A., 615.
 α -Di-(3-carboxy- α -naphthylmethyl)carbamides, *di*hydroxy-, and their ethyl ester, A., 615.
 $\beta\beta$ -Dicarboxypentadecolactone, γ -hydroxy-, and its derivatives, A., 1094.
 1:2-Dicarboxycyclopropane-3(2')-*spiro-trans*hexahydrohydrienes, and their derivatives, A., 728.
 Dichroism, circular, measurement of, A., 286.
 Dicodide, detection and determination of, B., 945.
 s -6-Dicoumarinylcarbamide, A., 1161.
 6:6'-Dicoumaryl, A., 1056.
 6:6'-Dicoumarylthiocarbamide, A., 1422.
 Dicyanogen, formation of, from calcium cyanamide, A., 807.
 Di-2:3-dializarin, *di*-2:3-dibromo-, additive compounds of, with tin chlorides, A., 1061.
 Di-2:3-dianthraquinone, *di*-2:3-dibromo-, additive compounds of, with tin and aluminium chlorides, A., 1061.
 NN' -Di- $\gamma\gamma$ -diethoxy-*n*-propylhydrazine, and its hydrogen oxalate, A., 937.
 2:5-Di-3':5'-dimesitylbenzene, 1:3:4:6-tetrahydroxy-2:5-*di*-3':5'-*di*-bromo-, tetra-acetyl derivative, A., 1049.
 4:4'-Di- γ -dimethylaminobenzylidenedihydrazinotriphenylmethane, A., 1416.
 6:6'-Di-(4:7-dimethylcoumaryl)thiocarbamide, A., 1423.
 Di(dimethylethylpyrrol)ketones, and their derivatives, A., 1168.
 Di-3:5-dimethylpyrrol-2:2'-ethan- α -one, A., 494.
 Di-(3:5-dimethylpyrrol)ketone, and its derivatives, A., 1168.
 $\alpha\alpha'$ -Di-(2:4-dimethylpyrrol-5)-succinic acid, methyl ester, A., 1428.
 Di- γ -2:2'-diphenylchromenyl-4:4'-dithiolmethylene ether, A., 1305.
 2:2'-Didiphenyl-4:4'-disulphonic acid, *di-p*-amino- and 2:2'-*di-p*-nitroamino-, dibenzoyl derivatives, and their dyo derivatives, A., 1046.
 Didiphenylenedibenzylethane, A., 1412.
 Didiphenylenediethylethane, A., 1412.
 Didiphenylenedimethylethane, A., 1412.
 Di- $\alpha\beta$ -diphenylethyl ether, A., 219.
 $\alpha\beta$ -Didiphenylethylene, *di-p*-chloro-, A., 947.
 2:6-Di(diphenylmethyl)naphthalene, 2:6-dichloro-, and 2:6-*di*hydroxy-, A., 92.

- 4:4'-Di(diphenylmethyl)stilbene, 4:4'-dichloro- and 4:4'-dihydroxy-, A., 92.
- N*-Didiphenyl-*N'*-phenylbenzenylamidine, *di-p*-chloro-, A., 87.
- Didiphenyl, derivatives of, A., 1406.
- Didiphenyl-4''':4''-dicarboxylic acid, and its derivatives, A., 1406.
- Di-*p*-diphenylethylene, and *mono*- and *di*-bromo-, A., 340.
- aa*-Di-*p*-diphenyl-4'-propene, and *β*-bromo-, A., 340.
- Di-*β*-diisopropylidene-fructose-1-phosphoric acid, preparation and oxidation of, and its salts and derivatives, A., 1039.
- Di-2:3-diquinizarin, *di*-2:3-*di*-bromo-, additive compounds of, with tin and antimony chlorides, A., 1061.
- Didodecylquinol, A., 1158.
- Dielectric coefficients of gases, A., 1113.
- constants, determination of, A., 894, 1213.
- by ultra-short wave method, A., 23.
- and the intramolecular field, A., 410.
- variation of, in intense fields, A., 1112.
- of amines, A., 546.
- of complex colloidal systems, A., 36.
- of conducting liquids, A., 23, 894.
- of electrolytes, A., 1370.
- of solutions of electrolytes, A., 560, 786.
- of aqueous solutions of electrolytes, A., 680, 1113.
- of ionised gases, A., 410.
- of liquefied gases, A., 410.
- of liquids under pressure, A., 1354.
- of mesomorphic substances, A., 894.
- of binary mixtures, A., 900.
- of pure organic compounds, A., 148.
- of organic liquids, at medium frequency, A., 1213.
- of solutions of proteins, A., 562.
- of solid insulators, A., 1112.
- of thixotropic sols, A., 562.
- liquids, conduction of electricity by, A., 30.
- materials, (P.), B., 305, 1104.
- for condensers, (P.), B., 167.
- polarisation. See under Polarisation.
- Dielectrics, theory of, A., 23, 410, 546.
- X-ray study of molecules in, under electric stress, A., 670.
- properties of, in electric fields, A., 23.
- potential of, A., 546.
- interfacial forces at, A., 795.
- liquid, saturation current and conductivity at high voltages of, A., 801.
- Dierucolinolein bromide, A., 602.
- Diet, effect of, on unsaturated acids in blood, A., 385.
- on calcium assimilation, A., 1451.
- effect of lactose and acid-base value in, on *p_H* of intestinal contents, A., 1185.
- influence of proteins in, on basal metabolism and blood and urine in women, A., 256.
- biological value of mixed proteins in, A., 868.
- Osborne-Mendel mixture for experiments in, A., 1452.
- rich in egg-white, physiological effects of, A., 515.
- fat-deficient, metabolism and respiratory quotient of, A., 866.
- high-sucrose, effects of fat in, A., 1183.
- vegetarian, nutritive value of, A., 868.
- Di(ethanesulphonyl-*dl*-leucyl)diketopiperazine, A., 124.
- Di(ethanesulphonyl)methane, chloro-, A., 1395.
- aa*-Diethoxyalcohols, tertiary, preparation of, A., 461.
- 9:10-Diethoxyanthracene-2-carboxylic acid, A., 619.
- 9:10-Diethoxyanthracene-2-sulphonic acid, sodium salt, A., 619.
- aa*-Diethoxy-*β*-butylhexan-*β*-ol, A., 461.
- 2:3-Diethoxydiol, A., 1163.
- ββ*-Diethoxy-*β*-ethylbutan-*β*-ol, and its hydrolysis, A., 461.
- Diethoxymethylene, preparation of, A., 599.
- aa*-Diethoxy-*β*-methylpropan-*β*-ol, and its hydrolysis, A., 461.
- 2:6-Diethoxy-5-methylpyrimidine, A., 100.
- s*-Di-*p*-ethoxyphenylbiuret, A., 346.
- aa*-Diethoxy-*β*-propylpentan-*β*-ol, and its hydrolysis, A., 461.
- Diethyl ether, *aaββ'*-tetrabromo-, diastereoisomerides of, A., 1148.
- ββ'*-dichloro-, syntheses with, A., 96, 502.
- ββ'*-diiodo-, A., 96.
- quaternary diiodide from, A., 1033.
- sulphide, *αβα'β'*-tetrachloro-, A., 1394.
- heptachloro-, A., 334.
- sulphides, dichloro-, and *ββ'*-dihydroxy-, derivatives of, A., 463.
- Diethylamine, reaction of, with propylene oxide, A., 204.
- with isopropylethylene oxide, A., 204.
- hydrogen sulphide, A., 1041.
- 5-*p*-Diethylaminoanilothiohydantoin, A., 495.
- 1-Diethylaminoanthraquinone-4:6-disulphonic acid, A., 1062.
- 1-Diethylaminoanthraquinonesulphonic acids, sodium salts, A., 1062.
- ωω*-Diethylaminobenzyl alcohol, *o*-amino-, sulphonyl derivative, and its derivatives, A., 1049.
- 4'-Diethylamino-9:9-diphenyl-2:7-dimethylthioxanthene, A., 97.
- Diethylaminoethylamine, A., 751.
- 2-Diethylaminoethylamino-6-methoxyquinoline methiodide hydriodide, A., 751.
- 2-Diethylaminoethylaminoquinoline methiodide, A., 751.
- α*-Diethylamino-*α*-ethylbutyl alcohol, and its salts, A., 77.
- 2-(*β*-Diethylaminoethyl)pyridine, and its salts, A., 965.
- 2-*β*-Diethylaminoethylquinoline, and its salts, A., 964.
- 2-Diethylaminoethylquinoline-4-carboxylic acid, and its hydrochloride, A., 1167.
- 1-Diethylaminoethylthiobromine, and its pierate, A., 239.
- 5-*p*-Diethylamino-*α*-hydroxyanilothiohydantoin, A., 495.
- 2-*γ*-Diethylamino-*β*-hydroxypropylaminoquinoline methiodide, and its hydriodide, A., 751.
- 2-Diethylaminomethyl-2-hydroxytetrahydronaphthalene, and its salts, A., 1052.
- p*-Diethylaminophenyliminophthalonimide, A., 1414.
- α*-Diethylaminopropan-*β*-ol, and its salts, A., 204.
- Diethylaminopropylamine, A., 751.
- 2-Diethylaminopropylamino-6-methoxyquinoline methiodide hydriodide, A., 751.
- 2-Diethylaminopropylaminoquinoline methiodide hydriodide, A., 751.
- 2-Diethylaminoquinoline methiodide, A., 751.
- Diethylamine, *p*-fluoro-, A., 611.
- Diethylbarbituric acid, reaction of, with phosphorus pentachloride, A., 742.
- sodium salt, solubility of, in ethyl alcohol, A., 558.
- C*-Diethylbarbituric acid, crystallography of, A., 289.
- 5:5-Diethylbarbituric acid, A., 1074.
- sodium derivative, influence of magnesium chloride on narcotic and toxic effects of, A., 1087.
- imidoauric acid from, A., 1172.
- oxygen ethers of, A., 1074.
- p*-Diethylbenzene, *p-di-β*-hydroxy-, A., 833.
- Diethylbenzenes, dihydroxy-, dibromohydrins of, A., 946.
- 2:6-Diethyl-1:4-benzoquinone, A., 1062.
- Diethylcyanoacetamide, A., 742.
- Diethylcyanoacetic acid, ethyl ester, action of magnesium ethyl halides on, A., 471.
- 1:1'-Diethyl-5:6:5':6'-dibenz-*ψ*-cyanine iodide, A., 742.
- 1:1'-Diethyl-4:5:4':5'-dibenz-2:2'-thiocyanine iodide, A., 1076.
- 2:2'-Diethyl-5:6:5':6'-dibenzthiocyanine halides, A., 104.
- 5:5-Diethyldihydropyrimidine, *di*- and *tetra*-chloro-, A., 742.
- Diethylene dioxide (*dioxan*), Raman effect with, A., 145.
- crude, occurrence of peroxides in, A., 820.
- additive compounds of, with halogens and stannic halides, A., 599.
- Diethylene dioxide, 2:3-dichloro-, A., 1162.
- Diethylene glycol, nitration of, B., 385.
- Diethyl-*β*-ethyl-4'-butenylamine, A., 1279.
- Diethylgold acetylacetonate, bromide, and iodide, A., 78.
- 5:5-Diethylhexahydropyrimidine, 2:4:6-triamino-, hydrochloride, A., 742.
- γδ*-Diethyl-4*β*-hexene, *δ*-cyano-, A., 471.
- as*-Diethylhydrazine, reaction of, with phenylcarbimide, A., 474.
- Diethyl-*β*-hydroxy-*β*-ethylbutylamine, and its derivatives, A., 1279.
- Diethyl-*β*-hydroxy-*γ*-methyl-*n*-butylamine, and its salts, A., 204.
- Diethylidene-embelin, A., 1061.
- Diethylidenepentaerythritol, *di-β*-tribromo-, A., 1393.
- Diethyl ketone, *p*-nitrophenylhydrazone, A., 1286.
- O*-phenylcarbonyl derivative, A., 210.
- Diethylmalonic acid, *di-β*-cyano-, ethyl ester, A., 1397.
- Diethyl-*γ*-methyl-4*β*-pentenylamine, and its salts, A., 1279.
- 2:6-Diethylphenol, 4-nitro-, A., 1062.
- 4:6-Diethyl-2-pyridone, and 3-cyano-, A., 235.
- Diethylsulphone, *αβα'β'*-tetrabromo-, *β*-chloro-*β'*-iodo- and *ββ'*-di-cyano-, A., 1394.
- Diethylsulphoxides, *αβα'β'*-tetrabromo- and *αβα'β'*-tetrachloro-, A., 1394.

- Diethyl telluroketone, A., 605.
 1:4-Diethyl-2:3:5:6-tetrathiodiazine, A., 942.
 Diethylthallium tetra-acetylene, A., 1280.
 2:2'-Diethylthiocyanine salts, A., 103.
 1:4-Diethylthiolbenzene, and its tetrabromide, and α - and β -disulphoxides, A., 1048.
 Dietzite, crystal structure of, A., 550.
 Disoeugenol, structure of, A., 954.
 Diffusion, A., 301.
 pulsation theory of, A., 429.
 propagation velocity of, A., 793.
 viscosity, and thermal conductivity of gaseous mixtures, A., 793.
 of colloidal particles, A., 561.
 in gas mixtures, A., 32, 418, 1117.
 of liquids, A., 1119, 1364.
 of metals, A., 1118.
 of solids in contact with liquids, A., 899.
 of components of solid solutions, A., 1223.
 thermal, effect of low temperatures on, A., 554.
 Diffusion apparatus for detection of absorbed gases, (P.), B., 425.
 Diffusion coefficients of colloids, determination of, A., 302.
 Diffusion plant, (P.), B., 177.
 lin-Diflavanone, *s*-dithio-, A., 233.
 lin-Diflavone, *s*-dithio-, A., 233.
 Diflavones, synthesis of, A., 1305.
 Diflavone group, A., 96.
s-Di-2-fluorenylcarbamide, A., 1409.
s-Di-2-fluorenylthiocarbamide, A., 1409.
 Difluorenylacetone, A., 208.
 Difructose anhydride, non-identity of, with anhydrofructose, A., 72.
 anhydride acetate, from inulin, A., 941.
 Difurfurylidene-pentaerythritol, A., 1393.
 2:2'-Difuryl, 5:5'-dinitro-, A., 1422.
 Digestors, for fibrous materials, (P.), B., 582.
 Digitalin, and its hydrolysis, A., 468.
 Digitalinum verum, hydrolysis of, A., 74.
 Digitalis, active principles of leaves of, A., 651.
 glucosides, A., 74, 468; (P.), B., 91.
 behaviour of, in the body, A., 1453.
 distribution of saponins in, A., 777.
 μ of infusions of, A., 1466.
 preparation of tincture of, A., 388.
 relation of potency to total solids in tinctures of, B., 861.
 manufacture of crystallised product from, (P.), B., 1122.
 colorimetric evaluation of preparations of, by Knudson and Dresbach's method, B., 1073.
 biological assay of, A., 388.
 pharmacological assay of, A., 260.
 Digitalis lanata, glucosides, A., 468.
 and their action on the frog's heart, A., 119.
 Digitalis purpurea, toxicity and assay of, A., 1186.
 Digitoxigenin, correlation of, with periplogenin, A., 1297.
 Diglucosoxyanthraquinones, A., 940.
 2:6-Diglucosylruffopin, sodium salt, A., 826.
 Diglycyl-*dl*-alanyl-*dl*-leucine, A., 718.
 Diglycyl-*o*-aminobenzoic acid, and its chloroacetyl derivative, A., 984.
 Diglycylsulphanilic acid, A., 984.
 isoDigoxigeninic acid, A., 74.
n- and iso-Digoxigenins, and their diacetyl derivatives, A., 74.
 Dicyclohexyl, 4:4'-diamino-. See Perhydrobenzidine.
 Dicyclohexylacetylene, 1:1'-dihydroxy-, and its diacetate, A., 1057.
 $\alpha\beta$ -Dicyclohexylethylene glycol, A., 1294.
 Di(cyclohexylidene)pentaerythritol, A., 1393.
 2:6-Di(cyclohexyl)piperidine, A., 1431.
 Dihomoveratrylamine, and its salts, A., 1048.
 Dihydroabietic acid, dibromo- and dichloro-, derivatives of, A., 1414.
 Dihydro-*N*-acetylstrychnine acid, A., 1312.
 Dihydroaconiteins. See Tricarballeylins.
 9:10-Dihydroacridarsine, 10-chloro-, A., 751.
 9:10-Dihydroacridine-9-carboxylamide, 9:10-dihydroxy-, A., 965.
 Dihydroagathene, dihydroxy-, A., 359.
 Dihydroagathic acid, hydroxy-, methyl ester, A., 359.
 Dihydroagathiedicarboxylic acid, methyl hydrogen ester, A., 359.
 Dihydroisagathiedicarboxylic acids, and their esters, A., 232.
 Dihydroisantalactone, constitution of, and its derivatives, A., 360, 1065.
 Dihydroalkannin, and its tetra-acetate, A., 1298.
 Dihydroanhydrodihydrostrophanthidin, A., 1276.
 9:10-Dihydroanthracene-9:10:10-tricarboxylic acid, and its trimethyl ester, A., 208.
 Dihydro-2:3-benz-9-anthranol, A., 1064.
 6:14-Dihydrobenzopentindole, 14-nitro-6-hydroxy-, A., 366.
 Dihydrobrucidine, oxidation of, A., 970.
 relationship of acids from brucidine and, and their derivatives, A., 1433.
 Dihydrocamphene, 4-amino- and 4-hydroxy-, and their derivatives, A., 1300.
D-l-Dihydrocamphene-1-carboxylic acid, and its amide, A., 359.
 Dihydrocarotene, A., 491.
 β -Dihydrocarotene, A., 1299.
 Dihydro-*m*-codeinone, and its oxime, and 1-bromo-, A., 104.
d-Dihydrocodeinone, formation of, from sinomenine, A., 1171.
 Dihydrocodeinone, 1-bromo-, and its hydrobromide, A., 104.
 Dihydrocodeinone series, formation of, from dihydrothebaine series, A., 104.
 Dihydrocorchoritin, A., 1420.
 Dihydrocupreidine isoamyl, butyl, octyl, and propyl ethers, and their dihydrochlorides, A., 1077.
 Dihydrodecaborane, crystal structure of, A., 549.
 Dihydrodedimethylsparteine, A., 241.
 Dihydrode-*N*-methylmethoxydihydrosinomenine, and its methiodide, A., 501.
 Dihydrodeoxycodeines, and their salts, A., 1078.
 Dihydrodeoxytoxicarol, A., 1065.
 Dihydrodianhydrodihydrostrophanthidin, A., 1276.
 4:4'-Dihydrodiflavone, A., 1305.
 Dihydrodigoxigenin, and its diacetyl derivative, A., 74.
 4:13-Dihydro-9:10-dimethoxy-1:2:3:5:6:13-hexahydrobenzopyrrolinium salts, A., 365.
 γ -Dihydroelemolic acid, A., 847.
 α -Dihydroelemonic acid, A., 847.
 α -Dihydroergosterol, isolation of, from yeast-ergosterol, A., 618.
 isoDihydroergosterol A, A., 1412.
 epiDihydroergosterols, and their acetates, A., 1051.
 Dihydroeugenols, preparation of, (P.), B., 1041.
 1:2-Dihydrofuran, 1:2-dihydroxy-, benzoate of, A., 1422.
 4:5-Dihydro-3-glucosidouracil, A., 100.
 Dihydroguaiol, A., 1302.
 Dihydro-5-hydroxymethylsinomenine, and its derivatives, A., 105.
 Dihydrokawiaic acid. See β -Methoxy- ζ -phenyl-4 α -heptadienoic acid.
 Dihydrokawain, A., 89.
 Dihydrokycopene, A., 1066.
 9:10-Dihydro-9-(3:4'-methylenedioxyphenyl)-3:4:5:6-dibenzacridine, A., 98.
 Dihydromethyl-naphthalenes, A., 1281.
 Dihydromethylsparteine, and its methiodide hydriodide, A., 241.
 Dihydronaphthafuranones, and their acetyl derivatives, A., 737.
 Dihydronaphthapentindoles, and their derivatives, and nitro-, A., 366.
 Dihydroapponucidine picrate, A., 970.
 Dihydro-oreoselone, A., 1298.
 Dihydro-oreoselonic acid, and its methyl ester, A., 1298.
 Dihydro-oxidodianhydrodihydrostrophanthidin ethylal, A., 1276.
 Dihydropentindole, and 5-chloro-, and their derivatives, and chloro-nitro-, A., 1166.
 Dihydropentindole-8-carboxylic acid, 5-chloronitro-, ethyl ester, A., 1166.
 Dihydrophenarsazine, oxidation of derivatives of, A., 372.
 5:10-Dihydrophenarsazine, merquinonoid derivatives of, A., 1173.
 5:10-Dihydrophenarsazine, 10-chloro-, and its derivatives, A., 501, 1316, 1434.
 tri- and tetra-chloro-, A., 501.
 9:10-Dihydrophenarsazines, 10-thioeyano-, A., 1435.
 Dihydropinissylvic acid, and its derivatives, A., 94, 492.
 5:6-Dihydropyridine, synthesis of, and its picrate, and 2-chloro- and 2-hydroxy-, A., 1166.
 5:8-Dihydropyridine-3-carboxylic acid, 2-hydroxy-, A., 1166.
 Dihydropyrocatechol, A., 467, 1294.
 5:12-Dihydroquinbenzarsazine, 12-chloro-10-nitro-, hydrochloride, A., 1173.
 3:4-Dihydroisoquinoline, preparation of derivatives of, (P.), B., 622.
 Dihydroresorcinols, substituted, intramolecular strain in, A., 723.
 β -Dihydrorotenolone, and its acetyl derivative, A., 491.
 Dihydrorotenone, toxicity of, to goldfish, A., 260.

- β -Dihydrorotenone, A., 491.
dl- β -Dihydrorotenone, A., 1298.
 Dihydrorubrene, dihydroxy-, and its dehydration product, A., 1052.
 Dihydrosantonins, derivatives of, and *mono*- and *di*-chloro-, A., 490.
 Dihydro- β -santonins, oxides of, A., 1066.
 Dihydrosantoninketodicarboxylic acid, A., 1066.
 Dihydrosclareol, A., 737.
 Dihydrosinomenine, 1-amino-, and its dihydrochloride, A., 105.
 Dihydrosinomeninemethine, and its 9:10-dihydro-derivative, A., 1314.
 Dihydroteresantalic acid, identity of, with π -apocamphane-7-carboxylic acid, A., 626.
 Dihydrothebaccodine, identity of, with β -tetrahydrodeoxycodeine, A., 635.
 Dihydrothebainone, 1-bromo-, and its derivatives, A., 104.
 Dihydrothebainone series, formation of dihydrocodeinone series from, A., 104.
 2:3-Dihydro-1:3:4-thiadiazoles, iminothiol-, isomeric, A., 369.
 Dihydrotoxicarol, and its acetyl derivative, A., 1065.
 β -Dibydrotubaic acid, A., 491.
d(-)-Dihydroxylal, and its diacetate, A., 1038.
 Dihydroxybyrine, and its methiodide, A., 369, 750.
 Di-indene, polymerisation of, A., 833.
 Di-indolylpropionhydrazide, A., 1306.
s-Di-(γ -3-indolylpropyl)carbamide, A., 363.
 Di-indone, isomeric of, A., 1295.
*iso*Di-indone, and its salts and derivatives, A., 1295.
 3:3'-Di-indyl ketone, A., 355.
 1:3-Diketo-2- β -aldehydohenzylidenehydrindene, A., 355.
 γ δ -Diketo- δ -anisyl- α β -diphenylbutane, α -oximino-, A., 103.
 $\beta\beta'$ -Diketo- $\alpha\alpha'$ -bis(diphenyl)enyladipic acid, ethyl ester, A., 1414.
 Diketocholanic acid, dichloro-, derivatives of, A., 957.
 Diketocholanic acids, and bromo-, and hydroxy-, and their derivatives, A., 841.
 3:7-Diketocholanic acid, and its dioxime, A., 841.
 7:13-Diketocholenic acid, 3-chloro-, and its derivatives, A., 957.
 2:6-Diketo-3-cyano-4-methylpiperidine, A., 964.
 2:6-Diketo-3-cyano-4-*p*-nitrophenylpiperidine, A., 964.
 2:6-Diketo-3-cyano-4-phenylpiperidine, A., 964.
 2:6-Diketo-3-cyanopiperidine, A., 964.
 Di-2-keto-1:2-dihydro- α -naphthyl sulphides, 1-dinitro-, A., 838.
 1:2-Diketo-1:2-dihydrothionaphthen, thioindigotin from, A., 749.
trans-5:7-Diketo-4:9-dimethyldecahydronaphthalene, A., 1303.
 1:3-Diketo-4:5-dimethylcyclopentane-4:5-dicarboxylic acid, A., 1035.
 4:5-Diketo-1:2-diphenylpyrrolidine, derivatives of, A., 99.
 1:3-Diketohydrindene, synthesis of antiseptic derivatives of, A., 487, 622.
 1:2-Diketohydrindene-3-acetic acid, and its derivatives, A., 1055.
 2:6-Diketo-5-methyl-3-ethylpyrimidine, A., 100.
 Diketones, aromatic, transformations of oximes of, A., 357, 488, 624.
 α -Diketones, tautomerism of, A., 92.
 $\alpha\gamma$ -Diketones, alcoholysis of, A., 69.
 β -Diketones, in ring formation, A., 235, 1164, 1165.
 cleavage of, A., 1060.
 1:3-Diketones, enolic sodium derivatives, partition principle applied to structure of, A., 1035.
 Diketonucidine, degradation of, and its perchlorate, A., 970.
 Diketonucine, perchlorate and dihydrate, A., 500.
 5:12-Diketopentacene, 7:7:14:14-tetrachloro-, A., 624.
 2:3-Diketophenmorpholine, A., 747.
 4:5-Diketo-2-phenyl-1-*o*-nitrophenylpyrrolidine, A., 99.
 4:5-Diketo-2-phenyl-1:2'-nitro-*p*-tolylpyrrolidine, A., 99.
 Diketopiperazine, formation of, by enzymolysis of gelatin, A., 262.
 Diketopiperazines, absorption spectra of, A., 367.
 action of alkali on, A., 1430.
 3:5-Diketopyrazolidine, derivatives of, A., 495.
 4:9-Diketo-1:2:3:4-tetrahydroacenaphthene, A., 620.
 Dileuculose anhydrides, formation of from hydrolysed inulin, A., 827.
 Dilaudide, detection and determination of, B., 945.
 Dilinolenozoomarin bromide, A., 602.
 Dilinoleo- α -lecithin bromide, A., 600.
 Dill oil, determination of carvone in, B., 416.
 Dilupinylglutaramide, A., 499.
 Dilupinylsuccinamide, A., 499.
 Dilution, micro-, apparatus for, A., 1264.
 Dimalonic acids, action of potassium hydroxide on tetracarboxylic esters of, A., 351.
 2:5-Dimesitylbenzenes, 1:3:4:6-tetrahydroxy-2:5-*di*-3'-bromo-, and their derivatives, A., 1049.
 2:5-Dimesityl-*p*-benzoquinones, 3:6-dihydroxy-2:5-*di*-3'-bromo-, and their sodium salts and derivatives, A., 1049.
 2:5-Dimesitylquinol, α -3:6-dihydroxy-2:5-*di*-3'-bromo-, diacetyl derivative, A., 1049.
 α -Di(methanesulphonyl)ethane, and its iodo-derivative, A., 1394.
 Di(methanesulphonyl)methane, and its dichloro-derivative, A., 1394.
 1:4(8)-Dimethoxy-2-acetoglucoxyanthraquinone, A., 826.
 2:6-Dimethoxyacetophenone, 4-hydroxy-, A., 963.
 3:5-Dimethoxyacetophenone, ω :4-dihydroxy-, mono- and di-acetyl derivatives, A., 1424.
 5:7-Dimethoxy-3-acetyl-2-methyl-1:4-benzopyrone, A., 963.
 6:7-Dimethoxy-1- β -aminoethyltetrahydroisquinoline dipicrate, A., 365.
 3:5-Dimethoxyaniline, synthesis of, and its salts and derivatives, A., 475.
 1:3-Dimethoxyanthranol, 10-hydroxy-, A., 356.
 2:4-Dimethoxyanthranil acetate, A., 1059.
 1:4-Dimethoxyanthraquinone, *mono*- and *di*-amino-, and their derivatives, and 5-chloro-, A., 846.
 Dimethoxyanthrones, and their derivatives, and hydroxy-, A., 356.
 3:4-Dimethoxynoraporphine, 6-hydroxy-, and its hydrochloride, A., 1077.
 2:3-Dimethoxybenzaldehyde, 5-hydroxy-, A., 1155.
 3:4-Dimethoxybenzaldehyde, 2-hydroxy-, and its phenylhydrazone, A., 1411.
 4:5-Dimethoxybenzaldehyde, 2-hydroxy-, A., 73.
 acetate of, A., 1293.
 3:5-Dimethoxybenzamide, A., 475.
 1:4-Dimethoxy-6:7-benzanthraquinone, A., 1064.
 1:3-Dimethoxybenzene, 4-cyano-, A., 1298.
 3:4-Dimethoxybenzene, 1:2-dihydroxy-, dibenzoyl derivative, A., 1411.
 4:6-Dimethoxybenzene-1:3-dicarboxylic acid, and its methyl ester, A., 1298.
 1:3-Dimethoxybenzene-4:6-disulphonyl fluoride, A., 1405.
 4:4'-Dimethoxybenzerythrene, dinitro-, A., 947.
 3:5-Dimethoxybenzhydrazide, and its hydrochloride, A., 475.
 Di(methoxybenzhydryl)benzene, A., 1406.
 Dimethoxybenzoic acid, nitro-, and its methyl ester, A., 490.
 2:3-Dimethoxybenzoic acid, 6-hydroxy-, A., 1155.
 2:4-Dimethoxybenzoic acid, 5-amino-, 5-cyano-, and 5-nitro-methyl esters, A., 1298.
 4:5-Dimethoxybenzoic acid, 2-hydroxy-, synthesis of, and its acetyl derivative, A., 1293.
 Dimethoxybenzopyrone, hydroxy-, A., 1093.
 2:3-Dimethoxy-*p*-benzoquinone, A., 1411.
 β -2:4-Dimethoxybenzoylacrylic acid, and its methyl ester, A., 1155.
 2:4-Dimethoxybenzoyl- α -5-bromo-2:4-dimethoxyphenylpropionic acid, β -bromo- β -5-bromo-, and its methyl esters, A., 1155.
 3:4-Dimethoxybenzoyl-*o*-chlorophenylcarbinol, oxime of, A., 845.
 β -2:4-Dimethoxybenzoyl-2:4-dimethoxyphenylpropionic acids, and their derivatives, A., 1155.
 Di-*p*-methoxybenzylacetone, A., 85.
 o -Dimethoxybenzylbenzoic acids, A., 1294.
 s -Di-(4-methoxybenzyl)carbamide, *di*-3-nitro-, A., 614.
 Dimethoxybenzylchromanones, *mono*- and *di*-hydroxy-, and their derivatives, A., 361.
 ω -3:4-Dimethoxybenzylidenacetanilide, ω -cyano- and ω -cyano-*o*-nitro-, A., 237.
 6-Di-*m*-methoxybenzylidenacetoresorcinol, A., 96.
 ω -3:4-Dimethoxybenzylidenacetate-*p*-toluidide, ω -cyano- and ω -cyano-*o*-nitro-, A., 237.
 Dimethoxybenzylidenechromanone, and *mono*- and *di*-hydroxy-, and their acetyl derivatives, A., 361.
 pp' -4:4'-Dimethoxybenzylidenedihydrazino-*p''*-methoxytriphenylmethane, A., 223.
 4:4'-Dimethoxybenzylidenehydrazinotriphenylmethane, and 4:4'-*di*-*p*-hydroxy-, A., 1416.
 3:4-Dimethoxybenzylidenemalonanilic acid, and its silver salt, A., 1155.
 3:4-Dimethoxybenzylidenemalon-*o*-toluidic acid, A., 1155.
 2:2'-Dimethoxybenzylidene-3-naphthhydrazide, 4'-hydroxy-, A., 479.
 3:4-Dimethoxybenzylmalonanilic acid, A., 1155.

- 3:4-Dimethoxybenzylmalon-*o*-toluidic acid, A., 1155.
 6:7-Dimethoxy-1-bromomethyl-3:4-dihydroisoquinoline picrate, A., 365.
 Dimethoxybutyrophenones, hydroxy-, A., 963.
 4:5-Dimethoxy-2-carboxybenzoylformic acid, A., 1056.
 4:5-Dimethoxy-2'-carboxydiphenyl sulphide, 2-bromo-, A., 628.
 6:7-Dimethoxy-1-8-chlorobutyl-3:4-dihydroisoquinoline, and its salts, A., 365.
 6:7-Dimethoxy-1-chloromethyl-3:4-dihydroisoquinoline salts, A., 365.
 6:7-Dimethoxy-1-chloromethyltetrahydroisoquinoline, 1-cyano-, A., 365.
 3:4-Dimethoxycinnamylidene, A., 1155.
 3:4-Dimethoxycinnamic acid, 6-bromo-, and its derivatives, A., 364.
 Di-*o*-methoxycinnamoylphloroglucinol, A., 1162.
 6:7-Dimethoxycoumarin, A., 606.
 7:8-Dimethoxyisocoumarin-3-carboxylic acid, A., 1293.
 6:7-Dimethoxy-1-cyanomethyl-3:4-dihydroisoquinoline, and its salts, A., 365.
 1:1'-Dimethoxydianthraquinone, A., 356.
 3:3'-Dimethoxydianthraquinone, A., 1294.
 Dimethoxydianthrones, and dihydroxy-, and their acetyl derivatives, A., 355.
 1:3-Dimethoxy-4:6-di-*m*-benzylideneacetobenzene, and its bromides, A., 96.
 3:3''-Dimethoxydicoumarone, A., 96.
 $\beta\beta$ -Dimethoxydiethylsulphone, A., 1394.
 4:4''-Dimethoxydiflavone, A., 1305.
 2:2'-Dimethoxy-6:6'-di(hydroxybenzhydryl)diphenyl, and its derivatives, A., 1405.
 4:5-Dimethoxy-2-(3:4-dimethoxyphenyl)phthalide, A., 226.
 5:7-Dimethoxy-2:3-dimethyl-1:4-benzopyrone, A., 963.
 2:4-Dimethoxy- $\alpha\beta$ -dimethylcinnamic acid, formation of, from 7-hydroxy-3:4-dimethylcoumarin, A., 1069.
 4:4'-Dimethoxy-3:3'-dimethyldiphenyl, and nitro-, A., 954.
 6:6'-Dimethoxy-3:3'-dimethyldiphenyl sulphides and sulphoxides, A., 213.
 6:6'-Dimethoxy-3:3'-dimethyldiphenylsulphones, A., 212.
 2:2'-Dimethoxydiphenyl, 3:3':5:5'-tetranitro-, dimorphous forms of, A., 1048.
 4:4'-Dimethoxydiphenyl ether, A., 479.
 4:4'-Dimethoxydiphenyl, 3-nitro-, A., 954.
 2:4-Dimethoxy- $\beta\beta$ -diphenylacrylic acid, and its ethyl ester, A., 1069.
 Dimethoxydiphenylbisazobishomophthalimide, A., 721.
 4:4'-Dimethoxydiphenyl- $\omega\omega'$ -dicarboxylic acid, and its ethyl ester, and 3:3'-dinitro-, ethyl ester, A., 723.
ae-Di-*o*-methoxydiphenylethylene, A., 947.
 2:4-Dimethoxy- $\beta\beta$ -diphenylpropionic acid, and β -hydroxy-, and their ethyl esters, A., 1069.
 4:4'-Dimethoxydiphenylsulphone-3-carboxylic acid, A., 213.
 4:4'-Dimethoxydiphenylsulphone-3:3'-dicarboxylic acid, A., 212.
 Dimethoxyethoxybenzaldehydes, A., 73.
 Dimethoxyethoxybenzoic acids, A., 73.
 Dimethoxyethoxycinnamic acids, A., 73.
 Dimethoxyethoxyphthalic anhydride, A., 1093.
nm'-Dimethoxy- α -ethylstyryl ketone, A., 485.
 5:4'-Dimethoxyisoflavone, 7-hydroxy-. See Dimethylgenistein.
 Dimethoxyhelianthrene, and 4:4'-dihydroxy-, A., 356.
 10:11-Dimethoxy-1:2:3:4:6:7-hexahydrobenzpyridocoline, and its salts, A., 365.
 9:10-Dimethoxy-1:2:3:5:6:13-hexahydrobenzpyrrocoline, and its salts, A., 365.
 Dimethoxycyclohexan-*e*-one, A., 68.
 5:6-Dimethoxyhydrindene, A., 83.
 Dimethoxymandelic acids, A., 1415.
 Dimethoxy-3-methyldiphenylsulphones, A., 213.
 5:7-Dimethoxy-2-methyl-3-ethyl-1:4-benzopyrone, A., 963.
 5:7-Dimethoxy-3-methylflavone, A., 963.
 7:4'-Dimethoxy-2-methylisoflavone, A., 738.
 6:7-Dimethoxy-3-methylmorphenol, 1-bromo-, A., 1171.
 2:4-Dimethoxy-8-methyl-1:8-naphthyridine, A., 1309.
 2:6-Dimethoxy-5-methylpyrimidine, A., 100.
 1:2-Dimethoxy-4-methylthioxanthone, and its derivatives, A., 628.
 4:4'-Dimethoxy-4''-methyltribenzylmethylammonium bromide, A., 1408.
 4:4'-Dimethoxynaphthadanthrone, A., 356.
 3:4'-Dimethoxy- β -naphthylflavone, A., 1423.
 3:4'-Dimethoxynaphthylflavone, A., 963, 1423.
 Di(2-methoxy-3-naphthyl)hydrazide, A., 479.
 Di-2-methoxy- α -naphthyl disulphide, A., 723.
 2:4-Dimethoxy-1:8-naphthyridine methiodide, A., 1309.
 2:2'-Dimethoxy-4:4'-dinitro-*aa'*-dinaphthyl, and its derivatives, A., 1411.
 3:4-Dimethoxyphenol, A., 73.
 and its 3:5-dinitrobenzoate, A., 1298.
 3:4-Dimethoxyphenoxycetic acid, A., 1415.
 4:4'-Di-*p*-methoxyphenoxydiphenyl ether, A., 480.
 3:5-Dimethoxyphenylcarbamic acid, methyl ester, A., 475.
 3:4-Dimethoxyphenyl *o*-chlorobenzyl ketone *anti*-oxime, A., 732.
 Dimethoxy- α -phenylcinnamionitriles, A., 620.
 4-(3:4'-Dimethoxy)phenylcoumarin, 7-hydroxy-, A., 1069.
 7:8-Dimethoxy-2-phenylisocoumarin, A., 1293.
 9:10-Dimethoxy-3-phenyl-5:6-dihydrobenzglyoxalocoline, and its salts and nitro-derivative, A., 365.
 2:6-Dimethoxyphenyl β -3:4-dimethoxyphenylethyl ketone, 4-hydroxy-, A., 1040.
 2:6-Dimethoxyphenyl 3:4-dimethoxystyryl ketone, 4-hydroxy-, and its acetate, A., 1040.
aa-Di-(2-methoxyphenyl)ethane, $\beta\beta$ -dichloro-*aa*-di-5-nitro-, A., 1054.
 β -3:4-Dimethoxyphenylethylamine, derivatives of, A., 839.
 3:4-Dimethoxy- β -phenylethyl alcohol, and its derivatives, A., 1048.
s-Di- β -*p*-methoxyphenylethylcarbamide, A., 617.
cis- $\alpha\beta$ -Di-*p*-methoxyphenylethylene oxide, A., 219.
 3- β -3:4'-Dimethoxyphenylethyl-4-keto-2-thiontetrahydrothiazole, A., 1170.
 β -3:4-Dimethoxyphenylethylthiocarbamic acid, ammonium and β -3:4-dimethoxyphenylethylammonium salts, A., 1170.
 Di-*p*-methoxyphenylhydroxyethylamines, salts and derivatives of, A., 218.
dl-Di-*p*-methoxyphenylhydroxyethyltrimethylammonium iodide, A., 219.
 α -2:4-Dimethoxyphenylsuccinic acid, and 5-bromo-, and their derivatives, A., 1155.
 Dimethoxyphthalic acid, hydroxy-, A., 1093.
 α -Dimethoxypropane, β -chloro-, A., 600.
 Dimethoxypropionophenones, hydroxy-, and their acetate, A., 963.
 $\beta\beta$ -Dimethoxy-*n*-propyl alcohol, A., 710.
nm'-Dimethoxy- α -*n*-propyldistyryl ketone, A., 485.
 2:3-Dimethoxyquinol diacetate, A., 1411.
 2:6-Dimethoxyquinol, A., 274.
 Dimethoxyrubrene, and its oxide, A., 954.
 1:2-Dimethoxythioxanthone dioxide, and 4-bromo-, and its dioxide, A., 628.
 2:5-Dimethoxytoluene, bromo-derivatives of, A., 837.
 2:6-Dimethoxytoluene, A., 225.
o-2:4-Dimethoxy-*m*-toluoylbenzoic acid, A., 225.
 4:4'-Dimethoxytribenzylmethylammonium bromide, A., 1408.
 4:5-Dimethoxy-*o*-xylene, $\omega\omega'$ -diamino-, and its picrate, and $\omega\omega'$ -dichloroamino-, acetyl derivative, A., 217.
 Dimethyl ether. See Methyl ether.
 sulphate. See Methyl sulphate.
 3-(*ae*-Dimethylacetyl)cyclopentamethylene-1-nitrile, derivatives of, A., 359.
 3:4-Dimethylacetophenone-2-carboxylic acid, and its derivatives, A., 81.
 Dimethylacrylic acid, formation of, A., 821.
 Dimethyl-9-allyl-8-thiouric acids, A., 743.
 Dimethyl-9-allyl-8-thio-*p*-uric acids, A., 743.
 Dimethylamine, absorption and excretion of, A., 762.
 hydrogen sulphide, A., 1041.
 Dimethylaminoacetamidocamphor, and its perchlorate and derivatives, A., 1300.
p-Dimethylaminoanilidihydronaphthafuranones, A., 737.
 5-*p*-Dimethylaminoanilothiodantoin, A., 495.
 ω -Dimethylaminoanisyl-2-hydroxynaphthylmethane, A., 723.
p-Dimethylaminobenzaldehyde, action of bromine and nitrous acid on condensation products of, A., 87.
p-bromo- and *p*-nitro-phenylhydrazones, A., 834.
p-Dimethylaminobenzil, reduction of, A., 92.
 4'-Dimethylaminobenzil, 4-chloro-, A., 1158.
a-*p*-Dimethylaminobenzoin. See Benzoyl-*p*-dimethylaminophenylcarbinol.
 β -*p*-Dimethylaminobenzoin. See *p*-Dimethylaminobenzoylphenylcarbinol.
p-Dimethylaminobenzoyl-*o*-chlorophenylcarbinol, oxime of, A., 845.

- p*-Dimethylaminobenzoylphenylcarbinol, structure of, A., 225.
oxime of, A., 845.
- p*-Dimethylaminobenzoylphenylmethane. See *p*-Dimethylamino-deoxybenzoin.
- p*-Dimethylaminobenzopiperoin, A., 1059.
- p*-Dimethylaminobenzylamine, and its salts and acetyl derivative, A., 834.
- p*-Dimethylaminobenzylidene-2-acetylpyrrole, A., 739.
- p*-Dimethylaminobenzylidene-2-aminofluorenone, A., 1409.
- p*-Dimethylaminobenzylidenebenzylamine, and its methiodide, A., 834.
- p*-Dimethylaminobenzylidene-4-chloro-2-nitrophenylthiolamine, A., 1285.
- 4-Dimethylaminobenzylidenemalononitrile, 3-bromo-, A., 87.
- p*-Dimethylaminobenzylidenethiohydantoin, and its acetyl derivatives, A., 1170.
- 4-Dimethylaminobutyric acid, ethyl ester, action of Grignard reagent on, A., 942.
- 8-Dimethylamino-*n*-butyric acid, and its derivatives, A., 204.
- Dimethylaminocamphor perchlorate, A., 1300.
- 4-Dimethylaminocinnamic acids, α -cyano-3-bromo- and -3-nitro-, ethyl esters, A., 87.
- α -*p*-Dimethylaminodeoxybenzoin, *p'*-chloro-. See Phenyl-*p*-dimethylaminobenzyl ketone, *p*-chloro-.
- β -*p*-Dimethylaminodeoxybenzoin, *p'*-chloro-. See *p*-Dimethylaminophenyl-*p*-chlorobenzyl ketone.
- p*-Dimethylaminodeoxybenzoins, and their oximes, A., 92.
- 4-Dimethylamino- α - β -dicyclohexylethane, and its picrate, A., 1294.
- 2-Dimethylamino-3:4-dihydronaphthalene, and its salts, A., 214.
- p*-Dimethylaminodiphenyl- α -naphthylcarbinol, A., 1050.
- 2:5-Di(methylamino)-3-dodecyl-*p*-benzoquinone, A., 1158.
- 6-Dimethylamino-3-ethylhexan-3-ol, and its salts, A., 942.
- 6-Dimethylaminohexan-3-one, and its derivatives, A., 942.
- ζ -Dimethylamino-*n*-hexoic acid, and its derivatives, A., 204.
- p*-Dimethylaminohydrobenzoin, A., 92.
- p*-Dimethylaminohydrobenzoin, *p'*-chloro-, A., 1158.
- 5-*p*-Dimethylamino- α -hydroxyanilothiohydantoin, A., 495.
- $\alpha\beta$ -Di(methylamino)- α -4-hydroxy-3-methoxyphenylpropane, and its sulphate, A., 953.
- $\alpha\beta$ -Di(methylamino)- α -*p*-hydroxyphenylpropane, and its sulphate, A., 953.
- p*-Dimethylaminotri-*p*-hydroxytetraphenyl methane, A., 840.
- ω -Dimethylaminolupanine, and its dimethiodide, A., 499.
- Dimethylaminomethoxyhydrindenes, and their salts, A., 215.
- 2-Dimethylaminomethoxy-1:2:3:4-tetrahydronaphthalenes, and their salts, A., 86, 214.
- Dimethylamino-2-methylbenzthiazole methiodide, A., 764.
- p*-Dimethylamino- γ -methylbutan- β -ol methiodide, A., 86.
- Di-3-methyl-2-aminomethyl-4-ethylquinolineplatinum salts, A., 1167.
- 2-Dimethylaminomethyl-2-hydroxytetrahydronaphthalenes, and their salts, A., 1052.
- 2-Dimethylaminomethylquinoline, 3:4-dichloro-, and its picrate, A., 236.
- 2-Dimethylaminomethyl-1:2:3:4-tetrahydroquinoline, A., 236.
- 4-Dimethylamino-1-naphthoic acid, derivatives of, A., 350.
- 2:5-Di(methylamino)-4-*n*-nonyl-*p*-toluquinone, A., 1158.
- 2-*p*-Dimethylaminophenylaminoquinoline salts, A., 751.
- 10-*p*-Dimethylaminophenylanthrones, *mono*- and *di*-chloro-, A., 1294.
- p*-Dimethylaminophenyl α -chlorobenzyl ketone, and its *anti*-oxime, A., 732.
- p*-Dimethylaminophenyl *p*-chlorobenzyl ketone, and its oxime, A., 1158.
- p*-Dimethylaminophenyl-4-dimethylamino-1-naphthylcarbinol, A., 350.
- p*-Dimethylaminophenyl 4-dimethylamino-1-naphthyl ketone, A., 350.
- 10-*p*-Dimethylaminophenyldimethylanthrones, A., 341, 612, 1058.
- p*-Dimethylaminophenyldiquinolylmethane, A., 632.
- p*-Dimethylaminophenylditetrahydroquinolylmethane, A., 632.
- p*-Dimethylaminophenyliminoemelin, A., 1061.
- p*-Dimethylaminophenyliminophthalonimide, A., 1414.
- 10-*p*-Dimethylaminophenylmethylanthrones, A., 1058.
- α -Dimethylamino- β -phenylpropionitrile hydrochloride, A., 1404.
- p*-Dimethylaminophenylisopropylcarbinol, reduction derivatives of, A., 481.
- ω -Dimethylaminopiperonyl-2-hydroxynaphthylmethane, A., 723.
- 1- β -Dimethylaminopropyltheobromine picrate, A., 239.
- 2-Dimethylaminopyridine-5-arsinic acid, and its derivatives, A., 372.
- 4'-Dimethylaminostilbene, 4-chloro-, A., 1158.
- 8-*N*'-*N*'-Dimethylamino- α -*NNN*-trimethyltetramethyleneammonium salts and hydroxide, A., 718.
- p*-Dimethylaminotriphenylacetic acid, methyl ester, A., 481.
- p*-Dimethylaminotriphenylcarbinol, reduction of, A., 481.
- p*-Dimethylaminotriphenylmethyl peroxide, A., 481.
- 2:5-Di(methylamino)-4-*n*-undecyl-*p*-toluquinone, A., 1158.
- Dimethylaniline, reaction of, with 2:4:6-trichloropyrimidine, A., 1074.
- Dimethylaniline, *o*-fluoro-, and its salts, A., 1408.
- Dimethylanilines, nitro-, action of nitrous acid on, and 3:4-dinitro-, A., 950.
- Di-*p*-methylanilinotriphenylmethane, A., 632.
- 2:3-Dimethylantbracene, 9:10-dibromo-, A., 612.
- 9:10-Dimethylanthracene, formation of, A., 944.
- Dimethylanthranyl acetates, A., 341, 1058.
- Dimethylanthraquinones, 6:7-dichloro-1:4-dihydroxy-, and *di*- and *tri*-hydroxy-, and their diacetates, A., 1296.
- 1:4-Dimethylanthrone, 10-bromo-, A., 341.
- 2:3-Dimethylanthrone, and its acetate, and 10-bromo-, A., 612.
- 1:3- and 2:4-Dimethylanthrones, and 10-bromo-, A., 1058.
- 1:3-Dimethylbenzene, 5-hydroxy-. See *m*-5-Xylenol.
- 2-Di-*p*-methylbenzhydryldiphenyl-2'-carboxylic acid, A., 1059.
- NN'*-Dimethylbenzidine, A., 211.
- 1:2-Dimethylbenzimidazole-6-arsinic acid, A., 851.
- 2:3-Dimethyl-1:4-benzopyrone, 5:7-dihydroxy-, and its diacetate, A., 963.
- 7:8-dihydroxy-, and its diacetate, A., 1161.
- 3:4-Dimethylbenzoyl chloride and anilide, A., 1282.
- 1':2-Dimethyl-5':6'-benzothio-*p*-cyanine iodide, A., 742.
- 2:8-Dimethylbenzthiophanthrenquinones, 6-chloro-, A., 1163.
- Dimethyl-1:2:3-benzotriazole, 7-amino-, and nitro-, and their salts, A., 239.
- 3:5-Dimethyl-1:2:3-benzotriazole 1-oxide, 6-amino-, A., 852.
- Di-*p*-methylbenzylbenzene, and dichloro- and dihydroxy-, A., 719.
- α -2:5-Dimethylbenzylbenzoic acid, A., 341.
- s*-Di-(methylbenzyl)carbamides, *di*-5-amino-, diacetyl derivative, *di*-2-hydroxy-, and *di*-3-nitro-2-hydroxy-, A., 614.
- 4-Dimethylbenzylidenemalononitrile, 3-nitro-, A., 88.
- 2:4-Dimethylbenzylmalonic acid, ethyl ester, A., 1292.
- 4:4'-Dimethylbis-5:5'-sinomenol, and its acetyl derivative, A., 970.
- 2:4-Dimethyl-3- β -bromovinylpyrrole-5-carboxylic acid, ethyl ester, and its dibromide, A., 240.
- Dimethylbutadienes, addition of hydrogen bromide to, A., 460.
- $\beta\gamma$ -Dimethylbutane, $\alpha\beta\gamma\delta$ -tetrabromo-, action of ammonium sulphite on, A., 196.
- $\beta\gamma$ -Dimethyl- Δ^a -butene, A., 1031.
- $\beta\gamma$ -Dimethylbutenedisulphonic acid, salts of, A., 196.
- $\beta\beta$ -Dimethyl- Δ^a -buten- α -ol, preparation of, A., 712.
- Dimethylisobutylcarbinol, preparation of, and its dehydration, A., 1031.
- $\alpha\beta$ -Dimethylbutyric acid, α -hydroxy-, amide of, A., 472.
- $\beta\beta$ -Dimethylbutyric acid, *p*-bromophenacyl ester, A., 194.
- Dimethylcamphoranilic acids, A., 626.
- 2:4-Dimethyl-3- β -carbethoxy- $\alpha\beta$ -dimethoxyvinylpyrrole-5-carboxylic acid, ethyl ester, A., 241.
- 2:4-Dimethyl-3- β -carbethoxy- β -ethoxyvinylpyrrole-5-carboxylic acid, ethyl ester, A., 241.
- 2:4-Dimethyl-3- β -carbethoxyethylpyrrole-4-carboxylic acid, ethyl ester, A., 241.
- 2:4-Dimethyl-3- β -carbethoxyvinylpyrrole-5-carboxylic acid, ethyl ester, and its dibromide, A., 241.
- 2:4-Dimethyl-3- β -carboxyvinylpyrrole-5-carboxylic acid, esters, A., 368.
- ethyl ester, dibromide, A., 240.
- Dimethyldichloromethylcarbinol, derivatives of, with organic bases, A., 933.
- 2:4-Dimethylcinnamic acid, ethyl ester, A., 80.
- β :4-Dimethylcinnamyl alcohol, A., 724.
- Dimethylcoumalin, derivatives of, from reaction with maleic anhydride, A., 1427.
- 3:4-Dimethylcoumarin, 7-hydroxy-, formation of, and its derivatives, A., 962.
- conversion of, into 2:4-dimethoxy- $\alpha\beta$ -dimethylcinnamic acid, A., 1069.
- mono*- and *di*-hydroxy-, and their derivatives, A., 962.
- Dimethylcoumarins, 3-chloro-5-hydroxy-, acetyl derivative, and 7:8-dihydroxy-, A., 1304.
- 4:7-Dimethylcoumarinyl-8-carbamie acid, ethyl ester, A., 1162.

- 4:7-Dimethylcoumarinyl-6-carbamide, A., 1162.
 4:7-Dimethylcoumarinylthiocarbamide, A., 1423.
 4:7-Dimethylcoumarinyl-6-thiocarbimide, A., 1423.
 $\alpha\gamma$ -Dimethylcrotonic acid, α -cyano-, ethyl ester, A., 608.
 3:5-Dimethyldecahydro-4:8-ethylenopyrindacine-3-carboxylic acid, 3:5:7-trinitro-, A., 631.
 4:9-Dimethyldecahydronaphthalenes, A., 1303.
 3:3'-Dimethyldianthrone, 10-bromo-, A., 1058.
 9:10-Dimethyl-1:2:5:6-dibenzanthracene, A., 612.
 1:1'-Dimethyl-5:6:5':6'-dibenz- ψ -cyanine iodide, A., 741.
 2:2'-Dimethyl-5:6:5':6'-dibenzthiocyanine halides, A., 104.
 Dimethyldibenzyl sulphides, A., 1408.
 Dimethyldibenzylmethylenes, and their methiodides, A., 1408.
 4:4''-Dimethyldiphenyl, A., 1406.
 3:3'-Dimethyl-5:5'-di(ethoxymethyl)pyrromethene-4:4'-dipropionic acid, methyl ester, and its hydrobromide, A., 853.
 3:3'-Dimethyl-4:4'-diethyl-5:5'-di(ethoxymethyl)pyrromethene, and its hydrobromide, A., 853.
 3:3'-Dimethyl-4:4'-diethyl-5:5'-di(ethylthiomethyl)pyrromethene hydrobromide, A., 853.
 3:3'-Dimethyl-4:4'-diethyl-5:5'-di(methoxymethyl)pyrromethene, and its derivatives, A., 853.
 1:5-Dimethyl-2:6-diethylporphin, and its derivatives, A., 102.
 5:5'-Dimethyl-1:1'-diethylthiocyanin salts, A., 1076.
 3:3'-Dimethyl-5:5'-di(ethylthiomethyl)pyrromethene-4:4'-dipropionic acid, methyl ester, hydrobromide, A., 853.
 Dimethylspirodihydantoin, determination of constitution of, A., 853.
 3:7-Dimethylspirodihydantoin, A., 853.
 1:4-Dimethyl-1:4-dihydrobenzene, 2:3:5:6-tetrabromo-1:4-dihydroxy-, A., 1062.
 9:10-Dimethyl-9:10-dihydro-1:2:5:6-dibenzanthracene, 9:10-dihydroxy-, A., 612.
 9:10-Dimethyl-9:10-dihydrodibenzanthracenes, A., 612.
 3:6-Dimethyl-1:2-dihydropyridazine-4:5-dicarboxylic acid, hydrate of, and its derivatives, A., 632.
 2:5-Dimethyldihydroresorcinol, A., 1048.
 4:5-Dimethyldihydroresorcinols, and their hydrates, A., 723.
 2:7-Dimethyl-1:3-diketohydrindene, 4-hydroxy-, A., 622.
 Dimethyl diketone (*diacetyl*), production of, by fermentation, (P.), B., 177.
dioxime, preparation of, A., 467.
 compounds of bivalent cobalt, nickel, and copper with, A., 1274.
 mono- and di-phenylacetylhydrazones, A., 475.
 diphenylosazone, A., 69.
 phenylbenzylsazone, A., 69.
 phenylmethylsazone, A., 69.
 determination of, in butter, B., 695.
 2:4-Dimethyl-3- $\alpha\beta$ -dimethoxyethylpyrrole-5-carboxylic acid, ethyl ester, A., 240.
 3:3'-Dimethyl-5:5'-di(methoxymethyl)pyrromethene-4:4'-dipropionic acid, methyl ester, and its derivatives, A., 853.
 3:3'-Dimethyl-5:5'-di(methylthiomethyl)pyrromethene-4:4'-dipropionic acid, methyl ester, hydrobromide, A., 853.
 Dimethyldinaphthyl ketones, A., 612.
 2:2'-Dimethyldiphenyl (2:2'-*ditolyl*), 4:4'-dithionitrite, A., 821.
 3:3'-Dimethyldiphenyl (3:3'-*ditolyl*), 4:4'-difluoro- and 4:4'-difluoro-6-nitro-, A., 947.
 5-nitro-5'-amino-, and their *d*-tartrates, A., 1408.
 4:4'-Dimethyldiphenyl (4:4'-*ditolyl*) dibromide, stannic derivative, A., 503.
 4:4'-Dimethyldiphenyl, 2-halogeno-2'-nitro-, A., 340.
 Dimethyldiphenyl series, A., 340, 1408.
 2':6'-Dimethyldiphenylamine, 2:4-dinitro-4'-hydroxy-, 2'':4''-diniphenyl ether, A., 214.
 4''':4''''-Dimethyldiphenyldiphenyl, A., 1406.
 3:3'-Dimethyldiphenylsulphone, 6:6'-dihydroxy-, A., 212.
 3:4'-Dimethyldiphenylsulphone, 4-hydroxy-, A., 213.
 4:3'-Dimethyl-3:4'-dipropyl-5'-bromomethylpyrromethene, 5-bromohydrobromide, A., 746.
 Dimethyldipropyl-5:5'-dibromomethylpyrromethenes, hydrobromides of, A., 746.
 Dimethyldipropylpyrromethane-5:5'-dicarboxylic acids, and their ethyl esters, A., 746.
 Dimethyldipropylpyrromethenes, and 5:5'-dibromo-, and their derivatives, A., 746.
 5:5'-Dimethyl-2:2'-dithienyl, A., 104.
 $\beta\lambda$ -Dimethyl- $\Delta^{\alpha\gamma}$ -dodecadiene, and its tetrabromide, A., 1031.
 $\beta\lambda$ -Dimethyldodecane, synthesis of, A., 1030.
 $\beta\gamma$ -Dimethyleicosadienes, A., 1031.
 $\beta\gamma$ -Dimethyleicosane, synthesis of, A., 1030.
 Di-3:4-methylenedioxyphenylhydroxyethylamines, salts and diacetyl derivative of, A., 219.
 2:4-Dimethyl-3- β -ethoxyvinylpyrrole-5-carboxylic acid, ethyl ester, A., 240.
 Dimethylethylammonium salts, A., 1045.
 2:5-Dimethyl-1-ethylbenzthiazolium perchlorate, A., 1076.
 3:4'-Dimethyl-3'-ethyl-4- β -carboxyethylpyrromethene, 5'-hydroxy-, A., 497.
 4:7-Dimethyl-3-ethylcoumarin, 5-hydroxy-, A., 1304.
 1:4(a)-Dimethyl-7-ethyldecahydronaphthalene, A., 227.
 5:9-Dimethyl-3-ethyldecahydronaphthalenes, A., 1303.
 4:3'-Dimethyl-3-ethyl-4'-propyl-5'-bromomethylpyrromethene, 5-bromo-, hydrobromide, A., 240.
 Dimethylethylpyrromethenes, hydrobromides of, and their dibromo-derivatives, A., 102.
 3:5-Dimethyl-4-ethylpyrrol-3':5'-dimethylpyrrol-2:2'-ethan- α -one, A., 494.
 Dimethylfluorans, *mono*-, *di*-, and *tetra*-nitro-, A., 627.
 2:5-Dimethylfuran-3:4-dicarboxylic acid, ethyl ester, action of hydrazine on, A., 632.
 Dimethylgenistein, A., 1304.
 $\alpha\gamma$ -Dimethylglutaeonic acids, optically active, and their salts, A., 604.
 $\alpha\beta$ -Dimethylglutaric acid, γ -cyano-, and its derivatives, A., 603.
d- β -Dimethyl-*n*-heptane, A., 709.
l- $\beta\delta$ -Dimethylheptane, A., 1267.
 $\beta\delta$ -Dimethylheptan- β -ol, A., 1267.
l- $\beta\delta$ -Dimethylhexane, A., 709.
 1:4-Dimethylcyclohexane, crystallography of, A., 415.
 $\alpha\zeta$ -Dimethylhexane- $\alpha\zeta\zeta$ -tetracarboxylic acid, ethyl ester, A., 335.
 $\gamma\delta$ -Dimethylhexan- β -ol, A., 714.
 Dimethylhexan- β -ols, A., 709.
 2:6-Dimethylcyclohexanol, A., 1303.
 $\gamma\delta$ -Dimethylhexan- δ -ol- ϵ -one, and its semicarbazone, A., 714.
 $\gamma\delta$ -Dimethylhexan- β -one, and its semicarbazone, and δ -chloro-, A., 714.
 2:6-Dimethylcyclohexanones, semicarbazones of, A., 1303.
 2:6-Dimethylcyclohexanone-6-carboxylic acid, ethyl ester, A., 1303.
 1:3-Dimethyl- Δ^4 -cyclohexene, A., 1303.
 2:4-Dimethyl- Δ^3 -cyclohexene-1:2-dicarboxylic acid, A., 737.
 2:6-Dimethyl- Δ^4 -cyclohexenyl methyl ketone, and its semicarbazone, A., 1303.
 $\gamma\delta$ -Dimethyl- Δ^4 -hexinene- δ -ol, A., 714.
 β -Dimethylhydrazinopropaldehyde diethylacetal and semiacetal, hydrogen oxalates of, A., 937.
 4:4-Dimethyl-2:3:5:6-dihydroxybenzopyran, and its dibromo-derivative, A., 627.
 3:4-Dimethyl-7:8-dihydroxycoumarin, and its diacetate, A., 1161.
 Dimethyl- β -hydroxyethylsulphonium salts, A., 86.
 Dimethyl- γ -hydroxypropylsulphonium salts, A., 86.
 1:2-Dimethylindole, derivative of, from reaction with malic anhydride, A., 1428.
 Dimethylindoles, and their picrates, A., 370.
 5:7-Dimethylindolenine-yellow perchlorate, A., 238.
 1:2-Dimethylindolyl-5-ethylene- $\alpha\beta$ -dicarboxylic acid, methyl ester, and its derivatives, A., 1428.
 α -1:2-Dimethylindolyl-3-succinic acid, and its derivatives, A., 1428.
 Dimethyl ketone phenylosazones, A., 69.
 Dimethyl-laurapukine, and its methiodide, A., 750.
 Dimethylmangostin *heptabromide*, and *di*- and *tetra*-bromo-, A., 1158.
N-Dimethylmesidine, methylation of, and its picrate, A., 950.
 Dimethyl- δ -methyl-*n*-heptylamine, and its salts, A., 1309.
 9:10:1':4'-*endo*-7:7'-Dimethyl-2':3'-naphtha-1:2-anthracenedi- $\alpha\beta$ -succinic anhydride, A., 1292.
 3:4-Dimethyl- α -naphthacoumarin, A., 1304.
 2:7-Dimethylnaphthalene, 1-bromo- and 1-iodo-, A., 1282.
 2:8-Dimethylnaphthalene, and its picrate, and *diamino*- and *dinitro*-, A., 1282.
 Dimethylnaphthalenes, and their picrates, and nitro-, A., 1282.
 2:3-Dimethyl-1:4- α -naphthapyrone, A., 1304.
 3:4-Dimethyl-1:2- α -naphthapyrone, A., 1304.
 1:6-Dimethyl- α -naphthaquinone phenylhydrazone, A., 80.
 7:7'-Dimethyl-2':3'-naphtho-1:2-anthracene, A., 833.
 Dimethyl-2-naphthoic acid, 1-hydroxy-4:8-diamino-, dibenzoyl derivative, A., 615.
 1:7-Dimethyl- β -naphthol, A., 1282.
 Dimethylnaphthol-orange, A., 345.

- 7:7'-Dimethyl-2':3'-naphtho-3:4-phenanthrene, and its picrate, A., 1283.
- Dimethyl- α -naphthylamine as reagent for determination of reduction of nitrates, A., 1459.
- benzoyl derivative, A., 350.
- di- and tri-arylmethane derivatives of, A., 350.
- Dimethylnaphthylamines, and nitro-, and their derivatives, A., 1282.
- 2:4-Dimethyl-3- β -nitrovinylpyrrole-5-carboxylic acid, molecular compound of, with nitromethane, A., 368.
- l*- β -Dimethylnonane, A., 1267.
- β -Dimethylnonan- β -ol, A., 1267.
- Dimethylnonene, A., 1267.
- γ -Dimethyl- Δ^8 -octadiene- $\alpha\beta$ -disulphinic acid, salts and dimethylsulphone of, A., 600.
- l*- β -Dimethyloctane, A., 1267.
- β -Dimethyloctan- β -ol, A., 1267.
- Dimethyloctene, A., 1267.
- Dimethylolcarbamide, condensations of, with benzene and naphthalene derivatives, A., 614.
- Dimethylloxaluric acid, A., 632.
- Dimethylpentamethylenetetramine picrate, A., 966.
- β -Dimethylpentane, and α -bromo-, A., 709.
- β -Dimethyl-*n*-pentane, β -*di*hydroxy-, and its dibromide, A., 1417.
- l*- β -Dimethylpentanol, A., 709.
- δ -Dimethyl- Δ -pentene, β -bromo-, A., 194.
- Dimethyl- Δ -pentene- $\alpha\epsilon$ -dicarboxylic acids, α -cyano-, ethyl esters, A., 1392.
- β -Dimethyl- Δ -pentene- $\alpha\epsilon\epsilon$ -tricarboxylic acid, ethyl ester, A., 1397.
- δ -Dimethyl- Δ -pentinene, and its mercury derivative, A., 194.
- Dimethylphenacyl sulphide, A., 1419.
- Di-*o*-(methylphenoxy)methane, *di-o*-hydroxy-, A., 1047.
- γ -2:4-Dimethylphenylbutyl alcohol, and its bromide, A., 80.
- 2:4-Dimethylphenylbutyric acid, and β -hydroxy-, and their derivatives, A., 80.
- β -2:4-Dimethylphenylcrotonic acid, ethyl ester, A., 80.
- 4-Dimethylphenyl-2:6-dimethyl-1:4-dihydropyridine-3:5-dicarboxylic acid, ethyl ester, A., 1072.
- γ -2:4-Dimethylphenylpropyl alcohol, and its derivatives, A., 80.
- γ -2:4-Dimethylphenylvaleric acid, and its amide, A., 80.
- 3:6-Dimethylphthalic acid, 4:5-*dichloro*-, A., 1296.
- Dimethyl-3:4-phthalylphenanthrene, A., 1283.
- Dimethylpropene- α - γ -dicarboxylic acids, α -cyano-, ethyl esters, A., 608.
- $\alpha\alpha$ -Dimethylpropionic acid, *p*-bromophenacyl ester, A., 621.
- $\beta\beta$ -Dimethylpropylenecyclohexylamine, γ -hydroxy-, A., 343.
- Dimethylisopropyl-naphthalene picrate, A., 1301.
- 1:2-Dimethyl-3-isopropylcyclopentene, A., 736.
- 2:3-Dimethyl-4-propylpyrrole, and its derivatives, A., 746.
- 2:4-Dimethyl-3-propylpyrrole, and its derivatives, A., 746.
- 2:4-Dimethyl-3-propylpyrrole-5-carboxylic acid, ethyl ester, and its 2- α -bromo-derivative, A., 746.
- 2:5-Dimethylpyrazine, action of sodamide on, A., 100.
- Dimethylpyrazoline, salts of, A., 937.
- 2:4-Dimethylpyrrole ketimine hydrochloride, A., 494.
- 2:4-Dimethylpyrrole, 3-amino-, and its acetyl derivative, A., 368.
- 2:4-Dimethylpyrrole-5-acetic acid, ethyl ester, A., 1306.
- 2:4-Dimethylpyrrole-5-carboxylic acid, 3-amino-, and its derivatives, A., 368.
- 2:5-Dimethylpyrrole-3:4-dicarboxylic acid, ethyl ester, hydrazide of, A., 632.
- 2:4-Dimethylpyrrole-5-glyoxylic acid, and its ethyl ester, A., 494.
- 2:4-Dimethylpyrrole-5-(β -methylsuccinio anhydride, A., 850.
- 2:4-Dimethylpyrrole-5-succinic anhydride, A., 850.
- (2:4-Dimethylpyrrol)-(3'-amino-2':4'-dimethylpyrrolenyl)methane, 3-amino-, hydrobromides of, A., 368.
- 3:5-Dimethylpyrrol-3':5'-dimethyl-4'-ethylpyrrol-2:2'-ethan- α -one, A., 494.
- Di-(4-methyl-2-pyrrol)methane-5:5'-dicarboxylic acid, diamino-, diacetyl derivative, and its ethyl ester, A., 368.
- 1:6-Dimethyl- α -quinoline, 8-nitro-, A., 1171.
- 2:3-Dimethylquinoxaline, constitution of, and its dipotassium derivative, A., 852.
- 1:5-Dimethylsinomenine, 1:5-*di*hydroxy-, and its derivatives, A., 105.
- 4:6-Dimethylsinomenol, 1-bromo-, A., 1171.
- $\alpha\alpha$ '-Dimethylsuberic acid, and $\alpha\alpha$ '-dibromo-, and its methyl ester, A., 335.
- Dimethylsuccinamic acids, A., 1291.
- Dimethylsulphone, hexabromo-, A., 335.
- Dimethyl telluroketone, A., 605.
- 3:3'-Dimethyl-4:5:4':5'-tetraethylpyrromethene hydrobromide, A., 854.
- Dimethyl-1:2:3:4-tetrahydroquinolines, and their derivatives, A., 97.
- Di-1-methyltetrahydroquinolylmethane, A., 632.
- 5:5'-Dimethyl-3:3':4:4'-tetrapropylpyrromethene hydrobromide, A., 747.
- Dimethylthallium tetra-acetylene and -propane, A., 1280.
- 2:4-Dimethylthiazole, derivatives of, A., 104, 969.
- NN*-Dimethyl-dithiocarbamic acid, nitroso-, cobalt salt, A., 1427.
- 1:1'-Dimethylthiocyanine perchlorate, and 5-chloro-, iodide, A., 1076.
- 2:2'-Dimethylthiocyanine bromide, A., 104.
- p*-Dimethyl-dithiolbenzene, tetrabromides of, A., 1048.
- $\alpha\alpha$ -Dimethylthiolethane, A., 1394.
- 2:5-Dimethyl-6-*p*'-toluoylbenzoic acid, A., 1296.
- Dimethyltriazene, thermal decomposition of, A., 916.
- 3:3'-Dimethyltribenzylmethylammonium bromide, A., 1408.
- Dimethyltrilobaminemethylmethine, A., 1313.
- 1:3-Dimethyluric acid, potassium salt, A., 101.
- d*- β -Dimethylvaleric acid, and its ethyl ester, A., 709.
- 8:9-Dimethylisoxanthine, A., 744.
- Dimethylxanthine-8-thiolacetic acids, and their sodium salt, A., 743.
- Di- β -naphthaquinone, additive compound of, with antimony chloride, A., 1061.
- Dinaphthathioxins, *mono*- and *di*-bromo-, A., 739.
- Dinaphthazine derivatives, manufacture of, (P.), B., 290.
- β -Dinaphthol, oxidation of, A., 617.
- 4:4'-Di- α -naphthoyl-3:3'-dimethyldiphenyl, A., 612.
- Dinaphthyl dibromide and dichlorides, stannic derivatives of, A., 503.
- disulphide*, 2:2'-*dinitro*-, A., 342.
- 1:1'-Dinaphthyl, derivatives of, A., 966.
- 1:1'-Dinaphthyl, 6:6'-*dibromo*-2:2'-*di*hydroxy-, and its dimethyl derivative, A., 217.
- 1:2'-Dinaphthyl oxide, 6:6'-*dibromo*-2-hydroxy-, A., 1153.
- Dinaphthyls, *di*- and *tetra*-bromotetrahydroxy-, A., 215.
- Dinaphthylamines, manufacture of, (P.), B., 13.
- Dinaphthylaminoguanidines, A., 722.
- Di- β -naphthylboric acid, A., 244.
- 1:1'-Dinaphthyl-8:8'-dicarboxylic acid, resolution of, and the anhydride of the *l*-acid, A., 1155.
- 1:4-Di- α -naphthyl-1:4-dihydronaphthalene, 2:3-*dichloro*-1:4-*di*-hydroxy-, A., 1062.
- 1:1'-Dinaphthylene 2:2'-oxide, 4-amino-, A., 844.
- dioxide*, and its derivatives, A., 217.
- $\alpha\beta$ -Di-(β -naphthyl)ethane, *di*-1-hydroxy-, and its diacetate, A., 615.
- $\alpha\beta$ -Di-(α -naphthyl)ethane-3:3'-carboxylic acid, *di*-2-hydroxy-, A., 615.
- $\alpha\alpha$ -Dinaphthylethylene, and *mono*- and *tetra*-bromo-, A., 340.
- δ -Di-(α -naphthylmethyl)carbamide, *di*-2-hydroxy-, A., 615.
- 1:1'-Dinaphthyl-disulphide-2:2'-dicarboxylic acid, A., 620.
- Diolefines, manufacture of, (P.), B., 475.
- polymerisation of, (P.), B., 148, 237, 289, 333.
- manufacture of polymerisation products of, (P.), B., 105, 475, 917.
- treatment of polymerisation products of, (P.), B., 77.
- manufacture of condensation products of hydrocarbons and, (P.), B., 11.
- manufacture of condensation products of cyclic hydrocarbons and, (P.), B., 261.
- manufacture of resinous condensation products of, (P.), B., 261.
- $\alpha\delta$ -Diolefines, A., 709.
- Dioleo- α -lecithin bromide, A., 600.
- Dioleo- β -lecithin, A., 1033.
- Diopside from Monte Spinoza, Campiglia, A., 1391.
- 4:5'-Diisooxazolylcarbinol, A., 968.
- 4:5'-Diisooxazolylethylcarbinol, A., 968.
- 4:5'-Diisooxazolyl ketone, structure of, and its derivatives, A., 968.
- Dioximes, A., 103, 199, 223, 225, 238, 605, 714, 715, 1157, 1274.
- Dioxypyrimidone, B., 89.
- reactions of, A., 366.

- Dicyclopentadiene*, derivatives and additive compounds of, A., 473.
- Dipentaerythritol*, and its salts and derivatives, A., 62.
- Dipentamethylenethiuram tetra- and hexa-sulphides*, A., 1151.
- Di(cyclopentylidene)pentaerythritol*, A., 1393.
- Dipeptides*, action of acetic anhydride, on A., 1436.
- enzymic fission of, A., 392.
- containing *l*-(-)histidine, action of, with erepsin and trypsin-kinase, A., 1191.
- Di-3:10-perylenequinonyl sulphide*, bromo-, A., 1065.
- Di-3:10-perylenequinyl sulphide*, bromo-, A., 1065.
- Diphenanilic acid*, and its anil, A., 339.
- Diphenanthraquinone*, *di-2-bromo-*, additive compound of, with tin chloride, A., 1061.
- Diphenic acid*, preparation of fluorenone from, A., 1058.
- α-Diphenoxy-β-acetoxyp propane*, A., 600.
- 1:5-Diphenoxanthrone*, and its acetate, and 10-bromo-, A., 225.
- 1:5-Diphenoxy-10-*p*-dimethylaminophenylanthrone*, A., 225.
- 4:4'-Diphenoxydiphenyl ether*, *4:4'-*p*-diamino-*, and its diacetyl derivative, and *4:4'-*p*-dinitro-*, A., 480.
- 1:5-Diphenoxy-10-ethoxanthrone*, and its acetate, A., 225.
- α-Diphenoxy-γ-phenylpentane*, A., 620.
- Diphenyl*, structure of, A., 27.
- preparation of, pyrolytically, A., 1406.
- apparatus for, B., 874.
- manufacture of, (P.), B., 386.
- and its derivatives, A., 946, 1406.
- Raman spectrum of, A., 20.
- and its derivatives, X-ray analysis of, A., 290.
- specific heat of, A., 293.
- optical properties of crystals of, A., 1355.
- chlorinated, physical properties and commercial possibilities of, B., 105.
- use of, for organic synthesis, B., 531.
- production of non-crystalline resins from, (P.), B., 1147.
- derivatives, A., 1046.
- stereoisomerism of, A., 220, 631, 720, 1063, 1155.
- heterocyclic, A., 854.
- unsymmetrical, synthesis of, A., 730.
- Diphenyl*, 4-*p*-amino-, toluenesulphonyl derivative, bromination of, and *di*bromo-2-*p*-amino-, *mono*-, *di*-, and *tri*-bromonitro-4-*p*-amino-, bromodinitro-4-*p*-amino- and 4'-nitro-4-*p*-amino-, toluenesulphonyl derivatives, A., 1284.
- 2:4'-*diamino-*, acetylation and diazotisation of, and its 4'-acetyl derivative, and 4'-amino-2-hydroxy-, acetyl derivative, A., 613.
- 3:3'-*di*bromo-, A., 1406.
- 2:2'-bromo-amino- and -iodo-, 2:2'-chloro-amino-, -bromo- and -iodo-, 2:2'-iodoamino-, and its acetyl derivative, and 2:2'-nitro-bromo-, -chloro-, -hydroxy-, and its acetyl derivative, and 2:2'-nitroiodo-, A., 1406.
- 3:5:4'-*tri*bromo-4-*di*-*p*-amino-, ditoluenesulphonyl derivative, A., 1284.
- 4'-bromo-4-fluoro-, A., 945.
- 4-bromo- and 4-chloro-4'-fluoro-, nitration of, and 4-bromo- and 4-chloro-4'-fluoronitro-, and 4-fluoro-4'-amino- and -4'-nitro-, A., 946.
- mono-* and *di*-bromo-3-nitro-4-amino-, acetyl derivatives, A., 1151.
- 3:5-*di*bromo- and 3:5-*dinitro*-4-*p*-amino-, toluenesulphonyl derivatives, A., 629.
- chloro-2-amino-, and their acetyl derivatives, 2:5:2':5'-*tetra*-chloro-, disulphide of, and *dichloro-* and *chlorohydroxy-*, A., 1283.
- 4:4'-*di*fluoro-2-nitro- and -2:3'-*diamino-*, A., 947.
- 3-halogeno- and 3-hydroxy-3'-nitro-, A., 946.
- nitro-derivatives, reduction of, A., 833.
- 3:5:4'-*tri*nitro-4-hydroxy-, pyridine salt, A., 630.
- Diphenyl carbonate*, *p*-*di*iodo-, and its bisiododichloride, A., 837.
- ether, derivatives of, A., 616, 731.
- 5-chloro-2-amino-, A., 96.
- 2-iodo-, and its iodo*di*chloride, A., 345.
- 4-thiol-, and its disulphide, A., 616.
- ethers, 2-amino-, acetyl derivatives, and 2-nitro-, substitution products of, A., 616.
- 3:4-*diamino-*, *p*-hydroxy-, and 3-nitro-4-amino-, and their derivatives, A., 479.
- bromonitroamino-, *mono-* and *di*-chloroamino-, chloronitro-, chloronitroamino-, iodo-amino- and -nitro-, and *mono-* and *di*-nitroamino-, and their derivatives, A., 616.
- Diphenyl methylene ethers*, *p*-*diamino-*, and its acetyl derivative, and *dinitro-*, A., 1047.
- diselenide*, *pp'*-*di*hydroxy-, and its diacetyl derivative, A., 218.
- selenoxide acetate, A., 1290.
- sulphide 4:4'-disulphonic acid, 2:2'-*diamino-*, and 2:2'-*dinitro-*, derivatives of, A., 84.
- 2:5:5'-*tri*bromo-2'-hydroxy-, methyl ether, A., 739.
- disulphide 2:2'-diarsinic acid, A., 244.
- 4:4'-disulphonic acid, 2:2'-*dinitro-*, barium salt, A., 84.
- mono-* and *di*-sulphides, *diamino-* and *nitro-*, colour reactions of, A., 84.
- 4:4'-*dithionitrite*, A., 821.
- Diphenyl series*, A., 1281, 1284.
- orientation in, A., 946.
- 9:10-*Diphenylacenaphthene*, and 9:10-*dichloro-* and 9:10-*di*hydr-oxy-, A., 1415.
- Diphenylacetaldehyde*, sodium enolate, A., 955.
- Diphenylacetic acid*, methyl ester, sodium enolate, A., 955.
- α-Diphenylacetoacetic acid*, and *α*-*di*-*p*-chloro-, ethyl esters, A., 726.
- 5-*Diphenylacetyl*-2:4-dimethylpyrrole, A., 1306.
- s*-*Di*(phenylacetyl)hydrazine, A., 476.
- Diphenylacetylphenylcarbinol*, A., 354.
- Diphenyladiipyl chlorides*, ketones formed by action of aluminium chloride on, and their derivatives, A., 1407.
- Diphenyl-4-aldehyde*, acids derived from, A., 1293.
- Diphenylamine*, indicator corrections for, A., 1141.
- as oxidation-reduction indicator, A., 64.
- as indicator in determination of iron, A., 328.
- and nitroso-, fluosilicates of, A., 612.
- hydrogen sulphide, A., 1042.
- formation of triphenylmethane dyes from, A., 632.
- Diphenylamine*, amino-, manufacture of derivatives of, (P.), B., 238.
- m*-hydroxy-, manufacture of derivatives of, (P.), B., 918.
- 2:4:6-*trinitro-*, crystal structure of, and aniline picrate, A., 415.
- Diphenylamines*, *mono*-, *di*-, and *tri*-chloro-, A., 501.
- mono-* and *hexa*-nitro-, compounds of, with crystal-violet base, A., 618.
- Diphenylamine-6'-arsinic acid*, 3:4-*dichloro-*, A., 501.
- Diphenylaminocarboxylic acids*, *dichloro-*, A., 501.
- Diphenylamine-2:2'-diarsinic acid*, A., 1173.
- Diphenylaminesulphonic acid* as an oxidation-reduction indicator, A., 1141.
- 2-*Diphenylaminobenzoic acid*, 4-nitro-, attempted synthesis of, A., 87.
- 5-*Diphenylaminoiminothiohydantoin*, A., 495.
- 6-*Diphenylamino-m*-toluidine, and its derivatives, A., 87.
- Diphenylanilinoguanidines*, *di*bromo-, and their azo-derivatives, A., 722.
- 4:6-*Diphenyl-o*-anisic acid, A., 730.
- Di-β-phenyl-α-anisylethyl ether*, A., 219.
- 1:5-*Diphenyl-3-anisylpyrazoline*, A., 223.
- Diphenylbenzenes*, stereochemistry of, A., 348, 1049.
- Diphenylbenzidine*, indicator corrections for, A., 1141.
- as oxidation-reduction indicator, A., 54.
- Diphenylbenzodipyridazines*, *di*hydroxy-, A., 485.
- 2:3-*Diphenylbenzopyryleninium perchlorate*, and 6-nitro-, A., 1070.
- Diphenylbenzopyrylium salts*, A., 1070.
- 2:5-*Diphenylbenzoquinone*, 3:6-*di*bromo-, A., 1062.
- 1:3-*Diphenyl-5-benzylbarbituric acid*, 5-bromo-, A., 1074.
- α*-*Diphenyl-β-benzylbutyric acid*, *β*-hydroxy-, A., 726.
- α*-*Diphenyl-β-benzylpentan-γ-one*, and its derivatives, A., 1072.
- α*-*Diphenyl-β-benzylpropane-α*-*β*-diol. See *d-a*-Phenyl-*β*-*di*-benzylethylene glycol.
- α*-*Diphenyl-β-benzyl-Δ*-propene, A., 948.
- Diphenylbisazobishomophthalimide*, A., 721.
- Diphenylbisazodi-o-coumaric acid*, A., 1285.
- Diphenylbisazodicoumarin*, A., 1285.
- 5:5'-*Diphenyl-Δ*^{2:2'}-bispyrrol-3-one, A., 100.
- Diphenylboric acid*, *p*-*di*bromo-, A., 244.
- α*-*Diphenyl-β*-*p*-bromophenylbutyric acid, *β*-hydroxy-*α*-*di*-*p*-chloro-, A., 726.
- Diphenyl-p*-bromophenylethynyl hydrochloride, A., 81.
- Diphenyl*di*bromothiophenylacetic acid*, A., 361.
- Diphenylbromothionaphthylacetic acid*, A., 361.
- Diphenylbromothionaphthylcarbinol*, A., 361.
- α*-*Diphenyl-Δ*^α-butadiene, derivatives of, formed by Friedel-Crafts reaction, A., 1412.
- Diphenylcyclobutane-α-dione*, formation of, by fractionation of phenylacetic anhydride, A., 355.

- Diphenyl- ω -tert.-butylpropionylcarbinol, and its bromide, A., 194.
 $\beta\beta$ -Diphenylbutyric acid, and its methyl ester, A., 946.
 $\gamma\gamma$ -Diphenylbutyric acid, and its methyl ester, A., 474.
Diphenylcarbamides, dihydroxy-, A., 209.
Diphenylcarbohydrazides, *pp'*-dibromo-, and *pp'*-dinitro-, A., 210.
Diphenyl-4'-carboxylic acid, 4-iodo-, and its sodium salt and methyl ester, A., 1406.
Diphenyldichloromethylcarbinol, A., 461.
Diphenyl-*p*-chlorophenylbenzenylamidines, A., 87.
2,2'-Diphenylchromylene, A., 1305.
1:2-Diphenylchrysene, A., 1157.
 $\alpha\gamma$ -Diphenylcrotonoimino-lactones, A., 726.
Diphenyl-3:3'-dialdehyde, 4:4'-dihydroxy-, and its derivatives, A., 1056.
 s -Diphenyldi-*n*-alkylethanes, and their stereoisomerism, A., 80.
4:4'-Diphenyldiarsenic trisulphide, 3:3'-diamino-, A., 1434.
Diphenyldiazomethane, reactions of, with thio-esters as free radical, A., 84.
1:5-Diphenyl-3-dibenzylmethylpyrazoline, and its bromo-derivative, A., 1072.
 $\alpha\beta$ -Diphenyl- $\alpha\beta$ -di-*p*-dimethylaminophenylethanes, A., 481.
Diphenyldidiphenyl, derivatives of, A., 1406.
Diphenyldiethoxymethylcarbinol, A., 461.
1:2-Diphenyl-1:2-dihydro- α -chrysapinacolin, A., 1157.
1:2-Diphenyl-1:2-dihydrochrysene, 1:2-dihydroxy-, A., 1157.
2:2-Diphenyl-1:2-dihydroquinoxaline, 3-amino-, A., 852.
1:2-Diphenyl-3:5-diketopyrazolidine, and its derivatives, A., 495.
 $\alpha\gamma$ -Diphenyl- α -(*p*-dimethylaminophenyl)propargyl alcohol, A., 618.
9:10-Diphenyl-1:4-dimethylanthracene, A., 341.
1:4-Diphenyl-2:6-dimethyldihydropyridine-3:5-dicarboxylic acid, methyl ester, A., 850.
 $\alpha\delta$ -Diphenyl- $\gamma\zeta$ -dimethyl- Δ^7 -octadiene- $\gamma\zeta$ -diols, A., 1413.
1-(2':4'-Diphenyl)-3:5-dimethylpyrazole, 1-2':4'-dinitro-, A., 937.
Diphenyl-dinitrogen-zirconium, A., 696.
sym.-Diphenyldiphenyls, A., 1406.
 $\alpha\beta$ -Diphenyl- $\gamma\zeta$ -diphenylacetylenyl- Δ^7 -octadiene- $\gamma\zeta$ -diol, A., 1413.
Diphenyldiphenylene-ethylene, and its oxide, crystalline forms of, and of their molecular compound, A., 1411.
 $\beta\epsilon$ -Diphenyl- $\gamma\delta$ -diphenylisopropylhexanes, A., 945.
Diphenyldiphenyl- α -naphthylmethyl, electron affinity of, A., 946.
Diphenyl-2:2'-disulphonic acid, and 4:4'-diamino- and their salts, A., 79.
Diphenyl-4:4'-disulphonic acid, and 2:2'-diamino- and 2:2'-dinitro-, and their derivatives, A., 1046.
Diphenyldisulphonic acids, dihalogeno-, and their derivatives, A., 1281.
2:4-Diphenyl-1:3-di-*p*-tolyl-6-methyldihydropyrimidine-5-carboxylic acid, ethyl ester, A., 850.
Diphenylene, See Diphenyl, 2:4'-diamino-
endo-1:4:5:8-Di-*o*-phenylene-2:3:6:7-dibenzanthraquinol, A., 1044.
endo-1:4:5:8-Di-*o*-phenylene-2:3:6:7-dibenzanthraquinone, A., 1044.
Diphenylene oxide, formation of, from xanthone, A., 233.
sulphonic acid, and its salts, A., 1426.
Diphenylene oxide, 2-chloro-, A., 96.
Diphenylene oxides, formation of, A., 616.
Diphenylene oxides, *mono*- and *di*-bromo-, *mono*- and *di*-chloro-, and chloronitro-, A., 616.
Diphenylene-2:2'-sulphones, *dibromo*-, A., 1281.
Diphenylenyloxalacetic anhydride, A., 1414.
 s -Diphenylethane (*dibenzyl*), structure of, A., 27.
and its derivatives, absorption spectra of, A., 283.
nitration of, A., 207.
 $\alpha\alpha$ -Diphenylethane, $\alpha\beta$ -difluoro-, A., 611.
 s -Diphenylethanes, β -chloro- α -amino-, and their hydrochlorides, A., 839.
 oo - s -Diphenylethanebisaminocamphors, A., 962.
 oo - s -Diphenylethanebisaminoethylenecamphors, A., 962.
 oo - s -Diphenylethanebisiminocamphors, A., 962.
 $\alpha\alpha$ -Diphenylethyl alcohol, α -*di*-*p*-chloro-, A., 947.
Di- β -phenylethylamine, and 3:4:3':4'-tetrahydroxy-, salts of, A., 1048.
Di- β -phenylethylamines, substituted, preparation of, A., 1048.
 $\alpha\beta$ -Diphenylethyldimethylamine, salts of, A., 1404.
 $\alpha\alpha$ -Diphenylethylene, *p*-chloro-, A., 947.
 β -fluoro-, A., 611.
 $\alpha\beta$ -Diphenylethyleneimines, A., 839.
3:4-Diphenyl-2-ethylisooxazolone, and its derivatives, A., 369.
2:5-Diphenylfuran-3:4-dicarboxylic acid, ethyl ester, hydrazide of, A., 632.
Diphenylfurylmethane, A., 96.
Diphenylglyceryl ethers, *di*-2:4-dinitro- and *di*-2:4:6-trinitro-, A., 722.
Diphenylguanidine hexasulphide, A., 474.
Diphenyl- ω -cyclohexylpropionylcarbinol, A., 194.
1:1-Diphenylhydriind-3-one, A., 946.
4:4-Diphenyl-2:3:5:6-dihydroxybenzopyran, and its dipotassium salt and derivatives, A., 627.
Diphenylhydroxyethylamines, optically active, A., 218.
Diphenylhydroxylamine, action of magnesium and magnesium iodide on, A., 721.
3:4-Diphenyl-5- α -hydroxy-*p*-methoxybenzylisooxazole, A., 103.
3:4-Diphenyl-5- α -hydroxy-*p*-methoxybenzylisooxazoline oxides, A., 103.
1:2-Diphenyl-3:4-dihydroxy-5-pyrazolidone, A., 495.
Diphenylketazine, A., 1058.
Diphenylmalonaldehyde acid, ethyl ester, A., 955.
Diphenylmalonic acid, methyl hydrogen ester, A., 956.
Diphenylmethane, 2:4'-dihydroxy-, formation of, A., 1153.
dinitrodihydroxy-, A., 614.
Diphenylmethanes, 3:5-dichlorohydroxy-, and their salts, A., 1047.
Diphenylmethane- α -arsinic acid, A., 751.
Diphenylmethane-2-carboxylic acids. See Benzyl-*o*-benzoic acids.
 $\alpha\gamma$ -Diphenyl- β -methylbutyric acid, β -hydroxy-, A., 726.
 $\alpha\gamma$ -Diphenylmethaneazomethine system, effect of *p*-substitution on mobility and equilibrium in, A., 834.
1:2-Diphenyl-4-methylcyclohexane-3:5-dione, A., 92.
 $\alpha\epsilon$ -Diphenyl- γ -methyl- $\Delta^{\alpha\delta}$ -pentadiene- γ -ol, A., 1413.
 $\delta\delta$ -Diphenyl- β -methylpentan- β -ol, A., 946.
 $\beta\delta$ -Diphenyl- δ -methyl- $\Delta\delta$ -pentene, A., 945.
Diphenylmethylpentenones, A., 714.
1-2':4'-Diphenyl-5-methyl-3-pyrazolone, 4-bromo-1-2':4'-dichloro-, and 1-2':4'-dichloro-, and its benzoate, A., 742.
2:5-Diphenyl-4-methyl-1:2:3-triazole, A., 239.
 $\alpha\alpha$ -Diphenyl- γ -methylvaleric acid, A., 502.
2:4-Diphenyl- α -naphthol, dimorphism in phosphoric esters of, A., 953.
Diphenyl- α -naphthylcarbinol, *p*-hydroxy-, tautomerism of, A., 1050.
Diphenyl- β -naphthyletbinyl hydrochloride, A., 81.
Diphenylnaphthylmethane dyes, acid, manufacture of, (P.), B., 337.
Diphenyl- α -naphthylmethyl, electron affinity of, A., 946.
2:3-Diphenyl-1- β -naphthylpyrrole, A., 849.
2:3-Diphenyl-1- β -naphthyltetrahydropyrrole, 2-cyano-5-hydroxy-, A., 849.
Diphenyl-4'-nitrile, 4-iodo-, A., 1406.
3:4-Diphenylisooxazole, A., 103.
3:5-Diphenylisooxazoline, and 3-*p*-bromo-, A., 622.
3:5-Diphenylphenol, and its benzoyl derivative, A., 730.
 $\alpha\epsilon$ -Diphenyl- β -phenylacetylenyl- $\Delta^{\alpha\delta}$ -pentadiene- γ -ol, A., 1413.
 $\alpha\gamma$ -Diphenyl- β -phenylbutyric acid, β -hydroxy- $\alpha\gamma$ -*di*-*p*-chloro-, A., 726.
Diphenyl-*p*-phenylenediamine, and its perchlorate, merquinonoid salts of, A., 835, 955.
1-(2':4'-Diphenyl)phenylmethylpyrazole, 1-2':4'-dinitro-, A., 937.
Diphenyl- ω -piperidinomethylcarbinol hydrochloride, A., 850.
Diphenylpolyenes, crystal structure of, A., 551.
extinction curves of, A., 1351.
 $\alpha\alpha$ -Diphenylpropane, $\alpha\beta$ -difluoro-, A., 611.
 $\beta\beta$ -Diphenyl-*n*-propane, $\beta\beta$ -4:4'-dihydroxy-, 3:5:3':5'-tetrabromo-derivative, action of aluminium chloride and benzene on, A., 838.
2:3-Diphenylcyclopropanedicarboxylic acid, 2:3-dibromo-, 3-hydroxy-, and 2-nitro-, and their derivatives, A., 620.
2:3-Diphenyl-4'-cyclopropene-1:1-dicarboxylic acid, and its methyl ester, A., 620.
 $\beta\beta$ -Diphenylpropionic acid, $\alpha\beta$ -dihydroxy-, derivatives of, A., 354.
 $\alpha\alpha$ -Diphenylpropylene glycol, A., 354.
NN-Di- γ -phenylpropyl-*p*-toluenesulphonamide, A., 725.
4:6-Diphenyl-2-pyridone, 3-cyano-, and its 1-methyl derivative, A., 235.
2:5-Diphenylpyrrole-3:4-dicarboxylic acid, ethyl ester, hydrazide of, A., 632.
 $\beta\beta$ -Diphenylpyruvic acid, derivatives of, A., 354.
2:5-Diphenylquinol, 3:6-dibromo- and 3:6-dihydroxy-, diacetyl derivative, A., 1062.
 δ -Di-(2-phenyl-3-quinolyl)carbamide, A., 1307.
 $\alpha\alpha$ -Diphenyl- β -(2-quinolyl)ethyl alcohol, A., 364.
2:3-Diphenylquinoxaline, constitution of, A., 852.

- 4:6-Diphenylsalicylic acid, and its derivatives, A., 730.
 Diphenylsulphone-3-carboxylic acid, 4-hydroxy-, A., 212.
 Diphenylsulphone-3:3'-dicarboxylic acid, 4:4'-dihydroxy-, A., 212.
 Diphenylsulphone-4:4'-disulphonic acid, 2:2'-dinitro-, and its salts, A., 84.
 Diphenyl-2-sulphonic acid, and dibromo-, derivatives of, A., 1406.
 Diphenyl-3-sulphonic acid, 4:4'-dibromo- and 4:4'-diiodo-, and their derivatives, A., 1281.
 1:2-Diphenyl-3:4:5:6-tetrahydrocoumarone, A., 845.
 Diphenylthallium chloride, A., 971.
 Di-(2-phenylthiazole-4-methyl)amine, and its dihydrochloride, A., 103.
 Diphenylthienylacetic acid, and its silver salt and methyl ester, A., 361.
 Diphenylthioacetic acid, phenyl ester, formation of, from β -thiol- β -phenylthiol- α -diphenylethylene, A., 1419.
s-Diphenylthiocarbamide, *s*-di-2:4-dibromo-, A., 721.
 Diphenylthiocarbazine, microchemical detection of heavy metals with, A., 328.
 Diphenylthioketen, A., 1419.
 Diphenylthiol-di- β -naphthylmethane, A., 218.
 $\beta\beta$ -Diphenylthiol- α -diphenylethylene, and its sulphide, A., 84.
 Diphenylthioethanes, *mono*- and *di*-nitro-, disulphoxides, and their salts, and disulphones of, A., 1048.
 Diphenylthioethylenediamine, *di*-(4-chloro-2-nitro)-, A., 1285.
 Diphenylthiolimide, *di*-(4-chloro-2-nitro)-, A., 1285.
 Diphenylthionacetic acid, phenyl ester, A., 964.
 Diphenylthionaphthylacetic acid, and its sodium salt and methyl ester, A., 361.
 Diphenylthionaphthylcarbinol, A., 361.
 Diphenylthionaphthylmethane, A., 361.
 Diphenylthiosemicarbazide, mercury salt, A., 721.
 1:4-Diphenylthiosemicarbazides, bromo- and nitro-derivatives, A., 721.
 $\alpha\gamma$ -Diphenyl- β -tolylbutyric acids, β -hydroxy- and β -hydroxy- $\alpha\gamma$ -*di*-*p*-chloro-, A., 726.
 Diphenyl-*p*-tolyl-dihydroiminazole, A., 1057.
 Diphenyl-*p*-tolyl-1-indenols, bromide of, A., 946.
 2:4-Diphenyl-1:3:5-triazine, 6-hydroxy-2:4-*di*-*m*-nitro-, manufacture of, (P.), B., 13.
 2:5-Diphenyl-1:2:3-triazole-4-carboxylic acid, A., 239.
 Diphenyl-2:4:5-trimethoxybenzylcarbinol, A., 1155.
 $\beta\beta$ -Diphenyl- α -2:4:5-trimethoxyphenylethylene, A., 1155.
p-Di- α -phenylvinylbenzene, A., 947.
 Diphenylvinylphosphinic acids, *mono*- and *di*-chloro-, and *o*-fluoro-, and their salts, A., 947.
 Diphenyl-4-acrylic acid, A., 1293.
 Diphenylmethylcyanamide, A., 1408.
 $\alpha\alpha$ -*p*-Diphenylphenylethylene, *mono*- and *di*-bromo-, A., 340.
 Diphenyl-4-propionic acid, A., 1293.
 β -4-Diphenylpropionic acid, $\alpha\beta$ -dibromo-, A., 1293.
 Diphenyl-3-thiolacetic acid, 4-amino-, A., 854.
 2:4-Dipthalimidobenzene, 1:5-dinitro-, A., 744.
 3:4:7:8-Dipthaloyldiphenylene oxide, 2:6:9-trihydroxy-, manufacture of, (P.), B., 579.
 Dipthaloylnaphthalene, manufacture of derivatives of, (P.), B., 1086.
 Di-*o*-phthalyl disulphide, A., 88.
 Diphtheria, insoluble precipitates in immunisation from, A., 267.
 anti-bodies in horses injected with antigens for, A., 1460.
 toxin, stability of, to heat, A., 656.
 diluent for, A., 656.
 effect of oxidation-reduction potential indicators on, A., 395.
 adsorption of, by aluminium hydroxide, A., 1336.
 action of formaldehyde on, A., 656.
 relation between, and blood-sugar, A., 395.
 purification of toxin and anatoxin of, A., 526.
 toxin and anatoxin of, and their purification and concentration, A., 267.
 toxin-antitoxin precipitate in, A., 395.
 precipitation of toxoid of, A., 1336.
 anatoxin for, A., 877.
 dissociation of anatoxin-antitoxin complex of, A., 526.
 purification of antitoxin for, A., 395, 1095.
 $\alpha\beta$ -Dipiperidinoethane, A., 1031.
 α -Dipiperidinopentamethinium perchlorate, A., 75.
 Dipiperonylidene-3:3'-dimethoxyflavanone, A., 96.
 Dipole molecules. See under Molecules.
 moments and Kerr effect, A., 669.
 at liquid-gas interface, A., 1213.
 Dipole moments of inorganic compounds, A., 894, 1213.
 of inorganic halides, A., 999.
 and structure of organic compounds, A., 895.
 of saturated and unsaturated compounds, A., 1354.
 of semi-polar linkings, A., 1113.
 3:4-Dipropionylacenaphthene, and its derivatives, A., 959.
 3:4-Dipropionylaminacenaphthene, A., 959.
 3:3'-Dipropionylbisacenaphthenedione, A., 959.
 3:3'-Dipropionylidiacendione, A., 1294.
 4:4'-Dipropionyl-3:5:3':5'-tetramethylpyrromethane, A., 747.
 4:4'-Dipropionyl-3:5:3':5'-tetramethylpyrromethene hydrobromide, A., 747.
 Diisopropyl ether, *di*- α -chloro-, A., 61.
 phosphate, *di*-*s*-dichloro-, calcium salt, crystallography of, A., 415.
 Diisopropylamine hydrogen sulphide, A., 1042.
 ω -Di-*n*-propylaminophenyl-2-hydroxynaphthylmethane, A., 723.
 Dipropylcarbinol, α -naphthylcarbimide derivative, A., 197.
 α -Diisopropylidene-fructose 3-sulphate, and its salts, degradation of, and their derivatives, A., 72.
 Diisopropylidenegalactose, ring structure of, A., 1276.
 Diisopropylidenegalactose-6-phosphoric acid, barium salt, A., 1393.
 Diisopropylidenestyracitol, A., 1033.
 Diisopropylmalonic acid, and its derivatives, A., 1272.
 2:4-Dipropylpyrrole-3:5-dicarboxylic acid, ethyl ester, A., 747.
 2:3-Di-*n*-propylquinoxaline, A., 852.
N-Dipyrzoyl ketone, and its picrate, A., 1168.
 Dipyrizine copper benzoate, A., 1415.
 Dipyrizine-2-carboxyhydrazide, *di*-4-chloro-, A., 362.
 Dipyrizinetetrathiocyanatomolybdic acid, and its derivatives, A., 697.
 2:2'-Dipyrizyl, formation of, from pyridine, A., 632.
 mercuri-iodide, A., 234.
 4:4'-Dipyrizyl, molecular salts of, with diamino-stilbene and -tolane, benzidine and phenylenediamines, A., 740.
 Dipyrizylum salts, molecular compounds of, A., 740.
 Di-(5-pyridylmethyl)amine, *di*-2-chloro-, A., 1306.
s-3:3'-Dipyrizylthiocarbamide, and its hydrochloride, A., 740.
NN'-Dipyrizyls, stereochemistry of, A., 1074.
 Dipyrizylethanones, synthesis of, A., 494.
 Dipyrizylenes, relationship of, with *meri*- and *holo*-dipyrizylum salts, A., 234.
 Dipyrizylenetetracarboxylic acid, ethyl ester, *meri*-perchlorate of, A., 234.
meri- and *holo*-Dipyrizylum salts, relationship of, with dipyrizylenes, A., 234.
 Disaccharides, fission of, by α -glucosidase, A., 983.
 reducing, occurrence of, in hydrolysed inulin, A., 202.
 Disalicylidene-embelin, A., 1061.
 Disazo-dyes, (P.), B., 240.
 manufacture of, (P.), B., 531, 670, 1004.
 for cotton and viscose silk, (P.), B., 753.
 acid, manufacture of, (P.), B., 531.
 containing copper, for substantive dyeing, (P.), B., 1087.
 direct, manufacture of, (P.), B., 435.
 for cotton, (P.), B., 151.
 insoluble, from 1:5-di-aminoanthraquinone, A., 732.
 Disazoxyphenols, isomeric, and their derivatives, A., 1152.
 Disease, preparation for combating, (P.), B., 994.
 infectious, preparations for immunising against, (P.), B., 905.
 Disinfectants, (P.), B., 744, 905, 908.
 automatic apparatus for delivering, to cisterns, etc., (P.), B., 1076.
 manufacture of neutral compositions for use as, (P.), B., 1156.
 bactericidal effects of, and their action on metals, B., 206, 363.
 Admiralty, testing of, B., 419.
 coal-tar, limitation of phenol coefficient of, B., 419.
 intestinal, action of, A., 527.
 containing mercury, for plants, (P.), B., 776.
 for seeds, (P.), B., 361, 776.
 for seeds and plants, (P.), B., 559.
 testing of, B., 567.
 Disinfection, A., 267, 878.
 chemistry of, A., 657.
 with "Elmucid," B., 225.
 of cereals, fruits, foods, etc., (P.), B., 1154.
 Disinomenine, A., 105, 635, 970, 1314.
 Disintegration apparatus, (P.), B., 94, 518, 1126.
 Disperse systems. See under Systems.

- Dispersing agents, manufacture of, (P.), B., 237, 579.
condensation products for, (P.), B., 57.
- Dispersion, magneto-optical, of organic liquids in the ultra-violet, A., 411, 895.
- Dispersions, production of, (P.), B., 954, 1132.
aqueous, preparation of, (P.), B., 746.
of the quicksand type, properties of, B., 701.
- Dispersion media, hydrocarbons as, A., 1230.
lyophilic, liquid ammonia as, A., 164.
- Dissociation constants of dibasic acids, A., 1126.
of organic acids, A., 801, 1012.
of weak acids and bases, A., 308.
- Distearidonozoomarin bromide, A., 602.
- Distibyls, A., 637.
- Distillation, (P.), B., 95.
in packed columns, B., 369.
thermodynamics of columns for, A., 430.
analysis by, A., 457.
con-, principles of, A., 1144.
continuous, (P.), B., 141.
destructive, of carbonaceous materials, (P.), B., 330.
dry, apparatus for recovery of material from, (P.), B., 422.
fractional, B., 997.
laboratory, A., 191.
laboratory, economy of time in, A., 1388.
low-temperature, (P.), B., 430.
steam, (P.), B., 571.
vacuum, A., 330; (P.), B., 280.
of phlegmatic liquids, A., 330.
laboratory, A., 191.
- Distillation apparatus, A., 457, 704; (P.), B., 183*, 425, 520, 615.
control of, B., 825; (P.), B., 868.
column, (P.), B., 868.
control of, B., 421.
carborundum, A., 591.
gauze-plate, A., 1388.
flasks, A., 456, 1263.
modified Engler flask, A., 1027.
laboratory, A., 592.
steam, A., 1027.
still-head, A., 1388.
vacuum, (P.), B., 703.
- Distilleries, increasing potassium content of waste from, (P.), B., 503.
feeding stuffs from dregs from, B., 943.
- Di(styryl β -phenylethyl ketone), A., 964.
- Di(styryl- γ -phenylpropyl ketone), A., 964.
- 3:5-Disulphophthalic anhydride, A., 1055.
- Disulphosuccinic acid, and its salts, A., 824.
- Disulphoxides, stereoisomerism of, A., 1164.
- 1:4-Dithian 1- β -hydroxyethochloride, and its mercurichloride, A., 464.
dioxide, A., 1394.
- 1:3-Dithiolan *di*- and *tri*-oxides, A., 1048.
- 2:2'-Dithionaphthenyl ketone-3-carboxylic acid, A., 1164.
- 2:2'-Dithionaphthenyl ketone-3:3'-dicarboxylic acid, and its derivatives, A., 1164.
- 1:5-Di-(2-thionaphthenyl)naphthalene-3:3'-dicarboxylic acid, A., 1164.
- m*-(S)-Dithionaphthenylquinone, and its derivatives, A., 1164.
- Di-*p*-toluenesulphon-2:4-dinitroamide, A., 629.
- Di-*p*-toluenesulphonylglycosyl- β -amine isopropylidene ether, A., 71.
- 1:4-Di-*p*-toluidino-6:7-benzanthraquinone, A., 1064.
- 5:8-Di-*p*-toluidino-1:2-benzanthraquinone, A., 1063.
- 1:4-Di-*p*-toluidinobenzthiophanthrenquinone, A., 1164.
- ω -Di-*o*-toluidinobenzyl alcohol, *o*-amino-, sulphonyl derivative, and its derivatives, A., 1049.
- 5:8-Ditoluidino-1-methylantraquinone, A., 1296.
- Di-*p*-toluoylbenzene, and its dioxime, A., 719.
- Di-*p*-toluoylfurazan, azine of, A., 1157.
- Di-*p*-toluoylglyoxime peroxide, azine of, A., 1157.
- Ditolyl. See Dimethyldiphenyl.
- s*-Ditolylacetones, and their semicarbazones, A., 1062.
- Di-*p*-tolylacetyl sulphide, A., 1074.
- Ditolylanilinoguanidines, and their azo-derivatives, A., 722.
- Di-1:2'-*p*-tolyl-2:3:6:7-anthracene-9:10-diyl, A., 833.
- 2:6-Ditolyl-1:4-benzoquinones, A., 1062.
- Ditolylbisazobishomophthalimide, A., 721.
- 1:3-Di-*p*-tolyl-4:2:1:2-diazene, A., 1074.
- Di-*o*-tolylguanidine heptasulphide, A., 474.
- Di-*p*-tolylidene-embelin, A., 1061.
- 9-(Di-*p*-tolylmethyl)fluoreneol, 9-hydroxy-, A., 1059.
- α -Ditolylloxy- β -acetoxyp propane, A., 600.
- Di-*p*-tolylloxy-*p*-benzoquinones, and 2:5-di-*p*-bromo-, A., 837.
- 2:5-Di-*p*-tolylloxyquinol, and its derivatives, A., 837.
- 9:9-Di-*p*-tolylphenanthrone, A., 1059.
- 2:6-Ditolylphenols, 4-amino- and 4-nitro-, A., 1062.
- Di-*p*-tolylphenylbenzenylamidines, A., 87.
- $\beta\beta$ -Di-*p*-tolylthiol- $\alpha\alpha$ -di-*p*-tolylethylene, and its sulphide, A., 84.
- Di(triacetyl)isodurenes, *di*(tribromo)- and *di*(trichloro)-, A., 1295.
- Di(triacetyl)mesitylenes, *di*(tribromo)- and *di*(trichloro)-, A., 1294.
- 1:7:1':7'-Ditrithylenethiocyanin salts, A., 1076.
- 2:5-Di-(2:4:6-trimethylphenyl)-*p*-benzoquinones, 3:6-di-*p*-bromo-2:5-di-3-bromo-, and 3:6-di-*p*-bromo-2:5-di-3:5-di-*p*-bromo-, A., 348.
- 2:5-Di-(2:4:6-trimethylphenyl)quinol, and 3:6-di-*p*-bromo-2:5-di-3-bromo-, and 3:6-di-*p*-bromo-2:5-di-3:5-di-*p*-bromo-, A., 348.
- s*-Di(trimethylstannyl)ethylene, A., 78.
- Diuretics, mode of action of, A., 869.
effect of, on colloidal osmotic pressure, A., 879.
- Diuretin, hyperglycaemia from administration of, A., 121.
- Divanillylidene-embelin, A., 1061.
- Divaric acid, ethyl ester, A., 1055.
- Divaricatic acid. See 4-Methoxy-6-*n*-propylbenzoic acid, 2-hydroxy-.
- Diveratryl disulphide, and 4-di-*p*-bromo-, A., 628.
- Divinyl ether, preparation and properties of, A., 1033.
sulphide, reactions of, and β -chloro-, A., 1394.
sulphilimine, A., 464.
sulphoxide, reactions of, and β -chloro-, A., 1394.
- p*-Divinylbenzene, preparation of, A., 833.
- Divinylbenzenes, and their tetrabromides, A., 946.
- Divinylsulphone, reactions of, A., 1394.
- Dixanthionium perbromide, A., 234.
- Dixanthyl peroxide, A., 1060.
- s*-Di-*p*-xenylcarbamide, A., 834.
- 9:10-Di-*m*-xylylanthracene, A., 1292.
- 1:9-Dixylylbenzodipyridazine, 4:6-di-*di*hydroxy-, A., 485.
- s*-Dixylylcarbamides, A., 1407.
- Do fu, composition of, B., 42.
- Dodecane, α -di-*p*-bromo-, and its dinitrile, A., 67.
- Dodecane-*ap*-diol, formation of α -oxidododecane from, A., 62.
- $\Delta\alpha$ -Dodecenoic acid, derivatives of, A., 1395.
- Dodecoic acid, α -amino-, and its picrate and derivatives, A., 1149.
- Dodecomitroanilides, A., 1149.
- Dodecyl hydrogen peroxide, α -hydroxy-, A., 1268.
- 3-Dodecyl-*p*-benzoquinone, and 2:5-di-*di*hydroxy-, A., 1158.
- Dodecylquinol, A., 1158.
- Dodonaea viscosa*, spiro disease of, A., 537.
- Doebner's reaction, A., 237, 1429.
- Dogs, sulphur compounds in, A., 385.
- Dolichos biflorus*, globulins of, A., 537.
- Dolichos lab lab*, proteins of, A., 401.
irradiation of tyrosinase from, A., 261.
- Dolomite, origin of, A., 596.
formation of, A., 1391.
polyhedral concretions of, A., 708.
treatment of, (P.), B., 539, 676*.
extraction of magnesia from, B., 18.
production of magnesia from, (P.), B., 27.
distinction between magnesite and, A., 453.
steel works, influence of iron oxide on sintering and properties of, B., 1095.
- Domeykite from Långban, A., 1028.
- Donovan's solution, stabilisation of, B., 274.
- Dopes, ethylcellulose, B., 502.
- Doppler effect, A., 1211.
measurement of, with slitless spectrograph, A., 135.
- "Doronoki," digestion of wood of, B., 1004.
- Dough, preparation of, (P.), B., 462.
apparatus for production of, (P.), B., 135.
mixing machines for, (P.), B., 570.
baking property of, (P.), B., 178.
treatment of, (P.), B., 513.
bleaching product for, (P.), B., 88.
chemical leavening agents for, B., 1119.
relation of overgrinding of flour to fermentation of, B., 177.
- Driers, B., 1061.
cobalt, B., 404.
precipitated and fused, preparation of, B., 356.

- Drops**, electrical counter for, A., 1026.
- Drosophila melanogaster*, pyruvic acid as food for, A., 647.
- Drugs**, extraction of, B., 993.
- micro-melting-point determinations of, B., 611.
- action of, on isolated rabbits' uterus, A., 1328.
- containing caffeine, evaluation of, B., 45.
- mydiatic, of the *Solanaceae*, alkaloid content of, B., 365.
- synthetic, vacuum microsublimation of, B., 90.
- characterisation of, B., 653.
- identification of, by means of their ash structures, B., 696.
- detection of benzoic and salicylic acids and of *p*-hydroxybenzoic esters in, B., 316.
- determination of extractive content of, B., 697.
- Drums**, cornerless, of stainless steel, (P.), B., 372.
- revolving, (P.), B., 322.
- Dry-cleaning**, (P.), B., 584.
- plant for, (P.), B., 838.
- with solvent recovery, (P.), B., 969.
- purification of solvents for, (P.), B., 347.
- solvent action in, A., 1041.
- "Dryco,"** production and use of, B., 1032.
- Dryers**, (P.), B., 278, 370, 518, 909.
- operation of, (P.), B., 94.
- transmission and regulation of heat to, (P.), B., 321.
- for pulp, B., 1077.
- for wall-board, etc., (P.), B., 139.
- atomisation, B., 93.
- centrifugal, (P.), B., 370, 952, 1029.
- Huillard, B., 785.
- rotary, (P.), B., 182, 825, 1029.
- drum, (P.), B., 140, 825.
- spray, (P.), B., 2.
- and combined burner, (P.), B., 614.
- steam, (P.), B., 370.
- tunnel, B., 321.
- "Dry-ice,"** See Carbon dioxide, solid.
- Drying** of casein, lactose, etc., (P.), B., 322.
- of ceramics, (P.), B., 322.
- of hides, skins, etc., (P.), B., 370.
- of materials, (P.), B., 2, 423, 1078.
- of sheet or strip materials, (P.), B., 1078.
- of solids, (P.), B., 658.
- of storage battery plates, etc., (P.), B., 1078.
- intensive, A., 34, 816.
- effect of, on gas reactions, A., 314.
- effect of, on inner equilibria, A., 799.
- of liquids, A., 294, 430.
- Drying agents**, production of homogeneous solutions of, (P.), B., 261.
- Drying apparatus**, (P.), B., 49, 278, 279, 370, 517, 518, 702, 866, 997.
- utilisation of waste heat of moisture in, (P.), B., 423.
- sealing of, (P.), B., 1078.
- for metallic articles, etc., (P.), B., 69.
- for solutions, A., 1026.
- for tea, etc., (P.), B., 997.
- heated roller, (P.), B., 140.
- rotary, (P.), B., 2.
- Drying machines** for garments, (P.), B., 347.
- for textiles, (P.), B., 321.
- link connected plate, (P.), B., 184.
- Drying plant**, (P.), B., 278.
- Ducks**, experimental sickness in, A., 646.
- Dulcin**. See *p*-Ethoxyphenylcarbamide.
- Dulcitol**, X-ray structure of, A., 152, 897.
- in red seaweed, A., 1341.
- Dunaliella viridis*, salt effects on swarms of, A., 1088.
- Duodenal juice**, determination of pancreatic enzymes in, A., 862.
- Duodenin**, A., 1461.
- Duodenum**, contents of, in children, A., 861.
- insular hormone in, A., 397.
- determination of pancreatic enzymes in, A., 1082.
- Duodephanthondiacid**, derivatives of, A., 1297.
- Durain**, combustion of, B., 659.
- Indian, density and composition of, B., 372.
- Duralumin**, annealing and quenching of, B., 205.
- X-ray investigation of ageing of, at room temperature, B., 681.
- influence of variations in heat treatment and ageing on, B., 1055.
- age-hardening of, B., 809.
- influence of iron on properties of, B., 1055.
- Duralumin**, super-, effect of artificial ageing of, on resistance to sea-water corrosion, B., 495.
- isoDurene**. See 1:2:3:5-Tetramethylbenzene.
- isoDurenol**, derivatives of, A., 950.
- isoDuridine picrate**, A., 950.
- Dust or Dusts**, inhalation and retention of, by man, A., 1439.
- deposition of, from air, B., 181.
- meter for measurement of concentration of, B., 321.
- apparatus for optical investigation of, (P.), B., 465.
- filters, (P.), B., 2, 141.
- apparatus for precipitation of, from gases, (P.), B., 323.
- separation of, from air or gases, (P.), B., 2, 3.
- electrical separation of, from gases, B., 725; (P.), B., 1145.
- separators for, (P.), B., 425.
- theory of, B., 1.
- centrifugal separators for, (P.), B., 522, 910, 911.
- mine, tests of inflammability of, B., 704.
- sampling of, from dust-laden air or gases, (P.), B., 826.
- analysis of, deposited at Jassy in Feb. 1929, A., 1389.
- Dye**, $C_{12}H_{11}O_4N_5$, from *p*-nitroaniline and tyrosine, B., 484.
- Dyes**, use of polychlorobenzenes in synthesis of, A., 950, 952.
- manufacture of, for intaglio printing, (P.), B., 337.
- fluorescence of solutions of, A., 1353.
- chemiluminescence in oxidation of, A., 1354.
- fastness of, to light and washing, B., 292.
- in ultra-violet light, B., 195, 797.
- to perspiration, B., 292.
- adsorption of, by hydrosols, A., 679.
- on metal wires, A., 420.
- colloid chemistry of, A., 908.
- sols of, A., 37, 426.
- effect of polar adsorption on rate of hydrogenation of, A., 1374.
- reactions between nucleic acid, gelatin and, A., 752.
- behaviour of particles of, in cellulose materials, B., 390.
- staining of oil mixtures and white blood-corpuscles by, A., 1451.
- fogging of photographic emulsions by, A., 1378.
- action of, on bacteria, A., 126.
- on enzymes, A., 765, 983.
- effect of injection of, on blood-cholesterol, A., 649.
- manufacture of intermediates for, (P.), B., 150, 667.
- containing metals, (P.), B., 919.
- for cotton and wool, manufacture of, (P.), B., 668.
- for fur, oxidation and identification of, B., 584.
- for leather, (P.), B., 855.
- for synthetic tanned leather, B., 109.
- acid, manufacture of, for wool, (P.), B., 875, 1041.
- adsorption of, by cotton, A., 1232.
- basic, mordants for, (P.), B., 293*.
- bilirubinoid, A., 853.
- direct, yellow and reddish-brown, manufacture of, B., 919.
- fast rapid, production of, (P.), B., 336.
- hair, differentiation of *p*-phenylenediamine and *p*-tolylene-diamine in, B., 195.
- metachromic, reversal and peptisation of, A., 38.
- mordant, manufacture of, (P.), B., 337.
- non-quinonoid, A., 840.
- non-toxic, to bacteria, A., 770.
- organic, adsorption of by aluminium oxide and hydrate, A., 420.
- by zinc oxide, A., 804.
- streplopentamethine**, aliphatic, A., 75.
- substantive, action of electrolytes on, A., 563.
- sulphur, production of, B., 476.
- printing with, B., 345.
- manufacture of substitution products of, (P.), B., 195.
- black, precipitation of waste from baths of, B., 965.
- blue, from indophenol, (P.), B., 667.
- fast, manufacture of, (P.), B., 106.
- sulphurised, manufacture of, (P.), B., 14.
- thionaphthen, A., 1163.
- vat, manufacture of, (P.), B., 339.
- from alizarin, (P.), B., 1134.
- from *o*-diamines and naphthalenetetracarboxylic anhydride, (P.), B., 386.
- from naphthalene-1:4:5:8-tetracarboxylic acid, (P.), B., 1086.
- from naphthalenetetracarboxylic dianhydride and *o*-diamines, (P.), B., 669.
- from pyridine compounds, (P.), B., 919.
- dyeing with, (P.), B., 345.
- apparatus for measurement of reduction value of, A., 1388.
- determination of reducing properties of, B., 628.

Dyes, vat, manufacture of pastes from, (P.), B., 292.
 manufacture of stable reduction compounds of, (P.), B., 239, 965, 1042.
 from isatin and carbazoles, (P.), B., 152*.
 of the thionaphthenindoleindigo series, (P.), B., 386.
 fast, pyrazolanthronecarboxylic anthraquinonylamides as, (P.), B., 338.
 green, manufacture of, (P.), B., 152*.
 spectrophotometric analysis of, B., 753.

Dye baths, devices for ascertaining concentrations, etc. of, (P.), B., 346.

Dye jigs, (P.), B., 198.

Dye vats, with immersion rollers, (P.), B., 18.

Dyeworks, dispersion of mists of water vapour in, (P.), B., 658.

Dyeing, B., 482.
 electrical adsorption theory of, B., 969.
 solid-solution theory of, B., 1090.
 jigger machines for, (P.), B., 585.
 with pattern effects on materials containing cellulose esters or ethers, (P.), B., 390, 391.
 with indanthrone dyes, (P.), B., 966.
 with leuco-vat esters, (P.), B., 17, 674.
 with substantive dyes, influence of electrolytes on, B., 673.
 with Turkey-red, B., 437.
 with vat dyes, (P.), B., 345.
 of acetate silk, B., 155, 291; (P.), B., 243, 922.
 of animal fibres, B., 483; (P.), B., 485, 1008.
 with vat dyes, (P.), B., 1007.
 of Bemberg cuprammonium silk and of cotton fabrics containing it, B., 800.
 of cellulose with basic dyes, B., 969.
 of regenerated cellulose with disazo-dyes, (P.), B., 922.
 of cellulose acetate products, with aniline black, (P.), B., 198.
 of cellulose ester materials, (P.), B., 292, 390, 923.
 of cellulose esters or ethers, (P.), B., 1004, 1046, 1137.
 and materials containing them, (P.), B., 674.
 of cellulose fibres, (P.), B., 155*.
 of cellulose materials (P.), B., 155*, 437, 485, 716, 923.
 of regenerated cellulose materials, (P.), B., 243, 292, 346, 438.
 of cotton, with mordant dyes, (P.), B., 243.
 of filamentous textile substances, (P.), B., 485.
 of furs, B., 345.
 of hosiery composed of mixed fibres, B., 1045.
 of jute, hemp, etc., (P.), B., 197.
 of knitted tubular fabrics, (P.), B., 755.
 of loaded silk, (P.), B., 838.
 of skins, hair, etc., (P.), B., 292.
 of textiles, (P.), B., 197.
 of textile fibres, (P.), B., 243.
 of textile and other material, (P.), B., 346.
 of textile materials, (P.), B., 1137.
 with sulphide and vat dyes, (P.), B., 801.
 of viscose silk in two-colour effects, B., 1007.
 of wool, (P.), B., 1007.
 theory of, B., 628.
 with ice colours, (P.), B., 17.
 of wool and silk with acid dyes, B., 242.
 of yarn in parti-colour effects, (P.), B., 1137.
 of yarns or fabrics, (P.), B., 584.
 black, of cellulose acetate silk, (P.), B., 1008.
 direct, effect of valency of electrolytes in, B., 1046.
 fast, by azo-couplings of leuco-compounds, (P.), B., 198.
 with fat dyes, (P.), B., 1008.
 on regenerated cellulose silk, (P.), B., 346.
 naphthol, (P.), B., 198.
 vat, composition for use in, (P.), B., 716.
 production of coloured reserves under, (P.), B., 485.

Dyeing apparatus, (P.), B., 155.

Dyeing machines, (P.), B., 244, 391, 438, 535, 802, 880, 1008.
 circulating system for, (P.), B., 156.
 open-width, (P.), B., 1008.

Dynamite, frozen and plastic, high brisance of, B., 368.
 gelatin, manufacture of, (P.), B., 699.
 detonation velocity of, B., 464.

Dynamos, brushes for, (P.), B., 1145.

Dysprosium, spectra of, A., 780.
 furnace spectrum of, A., 7.

Dysprosium organic compounds:—
 Dysprosium ethyl sulphate, absorption spectrum of, as reference for stellar velocities, A., 891.

E.

Earth, composition of the, A., 816, 1389.
 elements in crust of the, A., 1145.
 adsorption coefficient of radiation of the, for air, A., 282.

Earths, bleaching, purification of, (P.), B., 356.
 diatomaceous, B., 657.
 fuller's, adsorption by, A., 679.
 determination of hydrolytic acidity of, and its decolorising power, B., 881.
 spent, revivification of, (P.), B., 183, 193.
 infusorial, from Akhaltzikh, A., 192.
 rare, A., 51, 805.
 absorption spectra of, A., 905.
 absorption line spectra of, A., 1345.
 absorption spectra of ions of, A., 19.
 salts, absorption spectra, molecular volumes, and refraction of, A., 143.
 borides of, B., 717.
 bromates and sulphates of, A., 1020.
 halides of, A., 61.
 absorption spectra of double nitrates of, A., 408.
 sulphides of, A., 1380.
 determination of, A., 927.
 separation of, A., 813, 1381.
 red, of the Mediterranean, A., 1030.

Earthworms, chemical sense of, A., 1452.

Easton's syrup, determination of strychnine in, B., 861.

Ebonite, making electrical contact with rubber and, B., 76.
 manufacture of perforated articles from, (P.), B., 985.
 compositions, production of, (P.), B., 265.

Ebullioscope, A., 928.
 differential, A., 704.
 with condensers, use of, A., 58.
 with rectifying column, A., 1388.

***Echinacea angustifolia*, hydrocarbons of, A., 274.**

Echinopsine, detection of, microchemically, A., 639.

Eczema, alkalinity of blood in, A., 864.

"Edelmist," preparation and action of, B., 360.

Edestin, production of colloidal solution of, in which free from milk-albumin and milk-ferment, (P.), B., 946.
 action of proteinase on, A., 521.

Eggs, nuclein synthesis in development of, A., 255.
 proteins of, under restricted diets, A., 507.
 value of, for reproduction and lactation, A., 256.
 preservation of, (P.), B., 780.
 calculation of content of, in pastry, B., 739.
 fresh and preserved, viscosity of albumin of, B., 609.
 fresh, refrigerated and preserved, differentiation of, B., 740.
 hen's, osmotic equilibria between white and yolk of, A., 1177.
 p_H of white and yolk of, A., 646.
 copper content of, A., 1081.
 lead in, A., 380.
 effect of diet on protein constituents and copper in, A., 255.
 invertebrate, phosphorus metabolism in, A., 1326.
 preserved, properties of, B., 740.
 sea-urchin's, development of, A., 1448.
 effect of lithium on, A., 618.
 determination of, in macaroni paste, B., 944.

Egg albumin. See under Albumin.

Egg products, (P.), B., 415, 565*.
 production of, (P.), B., 695.
 determination of cholesterol and lecithin in, B., 413.

Egg-shells, oil absorption through, B., 42.

Egg-white, colloidal structure of, A., 36.
 effect of desiccation on nutritive properties of, A., 762.
 tuberculin type of sensitiveness produced with proteins of, A., 126.

Egg-yolk, spectrophotometric analysis of colouring matter of, A., 860.
 lecithin from, and its fatty acids, A., 975.
 substitute for, in leather manufacture, (P.), B., 131.
 examination of, B., 991.
 analysis of, B., 944.

***Eichornia crassipes*. See Hyacinth, water.**

Eicosahydrocarotene, A., 491.

***n*-Eicosane- $\omega\omega'$ -dicarboxylic acid, A., 713.**

Eicosanoctic acid, and its derivatives, A., 1396.

Eicosanoctyl alcohol, A., 1396.

Eigenfunctions, zero order, A., 1109.

- Elæostearic acid**, isomeride of, A., 1034.
 bromides of, A., 335, 822.
 iodine value of, B., 30.
- β -Elæostearin** from tung oil, B., 549.
- Elaidic acid**, formation of, from oleic acid, A., 601.
 parachor of, A., 149.
- Δ^6 -Elaidic acid**, ethyl ester, preparation of, from ethyl $\Delta^6\alpha$ -linoleate, A., 196.
- Elaidic/hydroxystearic acids**, A., 1271.
- Elasticity**, relation between plasticity, toughness, brittleness, and, B., 949, 950.
 of isotropic substances, A., 899.
 of metals in relation to temperature, A., 674.
- Elderberries**, pigment of, A., 1099.
- Elecampane root**, bitter substances from, A., 360, 734.
- Electric arc**, cathode fall in, A., 1105.
 high-frequency in positive column of, A., 888.
 temperature of, A., 888, 991.
 fluid for extinguishing, (P.), B., 934.
 quenching material for, (P.), B., 766.
 compositions resistant to, (P.), B., 934.
 cored carbon electrodes for, (P.), B., 498.
 elements of group VI as cathodes in, A., 887.
 cadmium, Raman effect with, A., 146.
 carbon, temperature of gas in, A., 779.
 mercury, vaporisation of mercury in, A., 140.
- cables**. See under Cables.
- birefringence of organic liquids**, A., 669.
- condensers**. See under Condensers.
- conductors**, weatherproof braidings of, B., 69.
 coating for, (P.), B., 154, 257.
 contact surfaces for, (P.), B., 306.
 coils, coating of, (P.), B., 641.
 loaded, manufacture of, (P.), B., 893.
 loaded copper, manufacture of, (P.), B., 167.
 metallic, quantum theory of dispersion in, A., 1209.
 unilateral, for rectifying alternating currents, (P.), B., 594.
- contacts**, alloy for, (P.), B., 849.
 palladium alloys for, (P.), B., 548.
 element for, (P.), B., 167.
- current**, thermocouple for measurement of, (P.), B., 499.
 apparatus for passage of, through gases, (P.), B., 498.
- discharge**, potential fall in, A., 1105.
 electron emission from Langmuir probes and cathodes in, A., 1107.
 equilibrium in, A., 888.
 chemical action of, A., 693.
 in gases, A., 2, 403, 539, 578.
 surface films on exploring electrodes in, A., 1104.
 combustion of gases in, A., 44, 1249.
 condensation of hydrocarbons by, A., 1249.
 in solid insulators, A., 546.
 in water vapour, A., 784.
 condensed, spectra of, A., 2.
 corona, spectrum of, A., 1103.
 starting potentials of, in neon, A., 539.
 edge, and breakdown, A., 991.
- electrodeless**, A., 1205.
 striations and magnetic effect in, A., 1343.
 in gases, initiation of, A., 1.
- glow**, dark space in, A., 1103.
 electrolytic reactions in, A., 805.
 chemical action in, A., 919.
 formation and decomposition of ammonia in, A., 1249.
- high-frequency**, electron velocity in, A., 782.
 electrodeless, A., 1345.
 glow, distribution of space potential in, A., 405.
- Townsend**, in dense clouds, A., 1345.
 apparatus, electrode supports for, (P.), B., 549.
- devices**, (P.), B., 306, 498, 849, 1059.
 cathodes for, (P.), B., 122, 168, 1145.
 low-temperature emissive cathodes for, (P.), B., 1104.
 localisation of alkali metal in, (P.), B., 168.
 introduction of gas into, (P.), B., 726.
 for producing ultra-violet rays, (P.), B., 683.
 for use as polarity indicators, (P.), B., 1145.
 electrodeless, (P.), B., 594.
 gas-filled, "cold" electrodes for, (P.), B., 892.
 with heated electrodes, (P.), B., 892.
- Electric discharge tubes**, (P.), B., 29, 766, 815, 849, 1016, 1059.
 afterglow in, A., 1, 541.
 oxidation of cathode surfaces of, (P.), B., 1016.
 oxide cathodes for, (P.), B., 304, 1059.
 thermionic cathodes for, (P.), B., 726.
 electrodes for, (P.), B., 306, 549.
 contact protectors for, (P.), B., 549.
 sealing-in wire for, (P.), B., 892.
 introduction of alkali metals into, (P.), B., 168*.
 introduction of mercury into, (P.), B., 1104.
 arc, gas or vapour filled, (P.), B., 816.
 gas-filled glow, (P.), B., 640.
 luminescence, (P.), B., 70, 168.
 incandescence, (P.), B., 767.
 starting of, (P.), B., 849.
 glass for, (P.), B., 815.
 used, revivification of, (P.), B., 892.
 luminous, (P.), B., 30, 257, 304, 355, 1016, 1059.
 switching means for heating device in, (P.), B., 683.
 gas-filling for, (P.), B., 1016.
 rare-gas, (P.), B., 168.
 positive column in, A., 781.
 rectifying, filling for, (P.), B., 498.
 fused silica, phosphorescence in, A., 22.
 triple-spectrum, A., 1204.
 vacuum, cathodes for, (P.), B., 683, 767.
 thermionic cathodes for, (P.), B., 257.
 electron emission material for, (P.), B., 122.
 refractory supports for, (P.), B., 549.
 heating elements, manufacture of, (P.), B., 594.
- insulation**. See under Insulation.
- lamps**, chemical and physical problems on production of light in, B., 815.
 removal of deposits from inner surface of, (P.), B., 70.
 cement for caps for, (P.), B., 30, 726.
 helical filaments for, (P.), B., 168.
 arc, cored carbon electrodes for, (P.), B., 498.
 metal-vapour, (P.), B., 355.
 tungsten-mercury, spectra of, A., 1.
 discharge, (P.), B., 726.
 glow, coloured, manufacture of, (P.), B., 30.
 glow-discharge, electrode for, (P.), B., 1145.
 gas-filled, (P.), B., 766.
 incandescence, (P.), B., 449, 849, 1059.
 material for, (P.), B., 766.
 filaments for, (P.), B., 304.
 getter for, (P.), B., 257.
 sealing-in wire for, (P.), B., 892.
 coloured, manufacture of, (P.), B., 726.
 firedamp-proof, (P.), B., 726.
 gas-filled, electrodes for, (P.), B., 1059, 1104.
 "Eureka" fuse for, (P.), B., 549.
- iron resistance**, A., 1263.
 luminescent, manufacture of, (P.), B., 1145.
 quartz, with constricted mercury arc, A., 57.
 with rare gas filling, starting device for, (P.), B., 209.
- loading coils**, magnetic cores for, (P.), B., 498.
- moments and molecular structure**, A., 410, 669, 894, 895, 1112.
 variations of, with temperature, A., 786.
 of amines, A., 546.
 of organic compounds, A., 410.
- rectifiers**, (P.), B., 69, 167, 1016.
 theory of, A., 1112.
 unilateral conductor for, (P.), B., 640.
 contact, cupric sulphide-magnesium, A., 1355.
 copper oxide, A., 409; (P.), B., 258.
 gas-discharge, with thermionic cathodes, (P.), B., 849.
 mercury-vapour, (P.), B., 683.
 carbonised iron anode for, (P.), B., 640.
 heating of solid cathodes in, (P.), B., 726.
 metal-vapour, (P.), B., 815.
 switch for extinguishing back-arcing in, (P.), B., 767.
- metallic oxide**, (P.), B., 69.
- resistances**, manufacture of, (P.), B., 306.
 material for, (P.), B., 848.
 hydrodynamic analogy of, A., 154.
- resistors**, (P.), B., 982.
 sputtered gold and platinum, properties of, A., 29.
- switches**, mercury, (P.), B., 934, 1145.

- Electrical apparatus, removal of dangerous gases from, (P.), B., 1059.
- brush, (P.), B., 306.
- conductivity, measurement of, A., 189.
- measurements of, with the telephone replaced by a loud speaker, A., 594.
- with the thermionic valve, A., 686.
- improved Kohlrausch's apparatus for, A., 1387.
- in relation to structure of metals, A., 1112.
- in acetone and methylethyl ketone, A., 434.
- of alloys, A., 556.
- of metallic mixed crystals, A., 158.
- of electrolytes, A., 685, 686.
- of gases, A., 1112.
- of ionised gases, A., 410.
- of pure liquids, A., 894.
- of univalent salts in ethyl alcohol solution, A., 43.
- of dilute solutions in fused antimony chloride, A., 43.
- of suspensions, A., 312.
- bipolar, in solids, A., 801.
- interfacial, A., 434.
- surface, A., 1121.
- device for detection of changes in materials, (P.), B., 70.
- precipitation. See under Precipitation.
- resistance, measurement of, by the barett method, A., 171, 801.
- at low temperatures, A., 673.
- relation of, to energy of magnetisation, A., 1001.
- change of, in magnetic fields, A., 552.
- due to magnetism and hardness, A., 416.
- Electricity, relation of life to, A., 866, 1451.
- galvanic, and cohesion pressure, A., 547.
- Electrocapillarity, A., 162, 570.
- Electrochemical cells. See under Cells.
- couple, polarised, (P.), B., 548.
- Electrodes, potentials of, A., 172.
- and adsorbed ionic films, A., 1237.
- effect of electric sparks on, A., 1249.
- figures formed by distribution of active deposit on, A., 693.
- for electric batteries, (P.), B., 257.
- for electrostatic precipitators, (P.), B., 123.
- for p_H determination, containers for, A., 329.
- in blood-serum, A., 505.
- of furnaces and vats, operation of, (P.), B., 168.
- antimony, temperature coefficient of, A., 1370.
- antimony-antimony oxide, determination of p_H with, A., 585, 811.
- arc-welding, (P.), B., 257, 306, 549, 594.
- bismuth oxide, laws of Becquerel effect at, A., 1212.
- cadmium, potential of, A., 569.
- calcium, for determination of calcium ions, A., 330.
- carbon, impregnation of, for electrolysis of alkaline salts, (P.), B., 640.
- ceric-cerous, reduction potential of, A., 312.
- collecting, for use in electrical precipitation of particles in gases, (P.), B., 168.
- irradiated cupric oxide, photogalvanic phenomena with, A., 1013.
- ferric-ferrous, determination of potential of, A., 802.
- and manganese dioxide, oxidation-reduction potentials of, A., 687.
- gas, A., 171.
- gas-metal, potentials of, in sterile bacterial culture media, A., 527.
- glass, A., 456, 1143, 1264.
- property of, A., 1237.
- potential of, A., 801.
- null instrument for, A., 928.
- use of, A., 43.
- for hydrogen-ion determination, A., 699.
- measurements with, by condenser galvanometer, A., 456.
- capillary, A., 1387.
- Haber, A., 914.
- graphite, origin of potential at, A., 802.
- hydrogen, A., 925.
- poisoning of, A., 171, 1012.
- micro-, A., 928.
- hydrogen peroxide, potential of, A., 569.
- iridi-irido-chloride, potential of, A., 172.
- iron and steel, potential of, A., 1012.
- Electrodes, lead, potential of, A., 566.
- mercuric-mercurous salts, oxidation-reduction potentials of, A., 687.
- mercurous chloride (*calomel*), potential of, A., 1237.
- for soil experiments, B., 214.
- scraped metal, and their relation to absolute zero of potential, A., 686.
- metallic, oxide films on, A., 1130.
- micro-, for use with cells and tissues, A., 778.
- moving, potential at, A., 687.
- polarised, density of ions at, A., 1207.
- positive, with gas circulation for air depolarisation, B., 682.
- quinhydrone, A., 914, 929.
- measurement of p_H by, A., 1141, 1383.
- reproducibility of, in air and in nitrogen, A., 456.
- quinhydrone-collodion, A., 1202.
- reference, temperature coefficients of, A., 312.
- silver halide, potentials of, against mixed halide solutions, A., 686.
- Söderberg, B., 933.
- solid, in electrometric analysis, A., 1260.
- stainless steel, properties of, A., 172.
- thermionic, manufacture of, (P.), B., 30.
- titanium-alloy, use of, in light therapy, A., 389.
- tungsten, use of in potentiometric titration, A., 699.
- working, temperature measurements at, A., 435, 1129, 1371.
- zinc, A., 1237.
- Electrodeposition, (P.), B., 354.
- influence of crystal orientation of the cathode on, A., 541.
- See also Electroplating.
- Electrodialysis, apparatus for, A., 457, 703.
- cell for, A., 929.
- Electro-endosmosis, A., 434, 914.
- in closed cylindrical tubes, A., 1122.
- and electrolytic water transport, A., 1236.
- Electro-filtration, A., 1263; B., 173.
- Electrokinetic effect, deviations from Helmholtz's theory of, A., 795.
- phenomena, A., 109.
- potentials. See under Potential.
- Electrolysis, apparatus for, (P.), B., 1104.
- throwing efficiency of baths for, B., 166.
- carrying frames for, (P.), B., 767.
- of fused electrolytes, crucibles for, (P.), B., 1058.
- igneous, utilisation of secondary reactions in, B., 717.
- micro-, qualitative, with small electrodes, A., 924.
- rapid, A., 805.
- Electrolytes, conductivity of, A., 686.
- bridge for determination of, A., 1263.
- influence of, on charge of diaphragms, A., 1122.
- in nitrobenzene, A., 311.
- in nitromethane, A., 311.
- conductivity and dielectric constant of, A., 1370.
- dielectric constants of solutions of, A., 560.
- activity coefficients of, A., 309.
- adsorption of, by crystals, A., 298, 1226.
- viscosity of, A., 164, 302, 560.
- coagulation of colloids by, A., 682, 907.
- properties of solutions of, A., 1123.
- volume of solutions of, A., 560.
- role of water in concentrated solutions of, A., 684.
- in mixed solvents, A., 40, 680.
- action of, on substantive dyes, A., 563.
- interaction of proteins and, A., 306.
- regenerative treatment of, (P.), B., 1145.
- dilute, liquid junction of, A., 569.
- dissolved, apparent volume and refraction of, A., 680.
- molar volumes of, A., 905.
- polarising, (P.), B., 594.
- solid, highly conducting, ionic mobility in, A., 1236.
- soluble, solubility of, A., 901.
- strong, refraction of, in solution, A., 1122.
- theory of solutions of, A., 1233.
- osmotic relations and hydration of, in solution, A., 35.
- association of, A., 799.
- dissociation of, A., 1010.
- undissociated molecules in aqueous solutions of, A., 911.
- internal friction of, in dilute solutions, A., 686.
- binary, limiting law for viscosity of, A., 1230.
- unsymmetric valency type, Debye-Hückel theory for, A., 1127.

- Electrolytes, weak, influence of hydrogen-ion concentration on adsorption of, by pure charcoal, A., 1226.
- Electrolytic apparatus for production of gases, (P.), B., 934.
- condensers, (P.), B., 766.
- conductivity, A., 433.
- effect of sucrose on, A., 1012.
- equivalent, at infinite dilution, A., 913.
- conductors, resistance of, at various frequencies, A., 1237.
- dissociation, A., 430, 799.
- and Raman effect, A., 431.
- of salts, rôle of solvents in, A., 684.
- pile, Evans, B., 762.
- polarisation. See under Polarisation.
- rectifiers, (P.), B., 167.
- electro-osmosis theory of, A., 10.
- glow discharge at active electrodes of, A., 138.
- electrolyte for, (P.), B., 167.
- low-frequency, (P.), B., 498.
- resistance, galvanometric measurement of, A., 913.
- valves, action of, A., 546, 1130.
- Electromagnet, A., 1389.
- Electromagnetic field, quantised singularities in, A., 1209.
- Electrometers, capillary, A., 801, 1144.
- Electromotive force. See Potential.
- Electrons, hyperfine structure separations of levels of complex configurations of, A., 664.
- Dirac's theory of, A., 141, 143, 1106.
- representation of Dirac's cloud of, A., 1107.
- swarm theory of, A., 894.
- relation of metrical theory to charge and mass of protons and, A., 666.
- and wave mechanics, A., 141.
- masses of, A., 279.
- ratio of mass of, to mass of proton, A., 783.
- mass absorption coefficient of K shells of, A., 542.
- effect of resolving power on absorption coefficient measurements of, in gases, A., 278.
- determination of volume of, A., 13.
- in motion, graphical calculation of magnitudes of, A., 141.
- methods for recording of, A., 278.
- Geiger point counters for, A., 142, 1206.
- recording coincidences between Geiger counters for, A., 995.
- properties of, A., 406, 429, 1208.
- constants of, and field theory, A., 782.
- reflexion of, analysis of surface structure by, A., 140.
- diffraction of, A., 13.
- and molecular structure, A., 13, 665.
- at single layer of atoms, A., 278.
- by crystals, A., 782.
- by single crystals, A., 1207.
- at oxygen adsorbed on tungsten, A., 278.
- by thin films of nickel and copper oxide, A., 1207.
- patterns of, A., 1207.
- crystal photographs of, A., 666.
- scattering of light by, A., 11.
- emission of, at low gas pressures, A., 140.
- from metal foil and animal tissue, A., 140.
- in chemical action, A., 994.
- in relation to conductivity and ferromagnetism, A., 1108.
- scattering of, A., 12.
- influence of radiative forces on, A., 665.
- by atoms, A., 11, 1107.
- in gases, A., 278, 1347.
- and energy loss, A., 782, 1206.
- angular distribution of, A., 1206.
- by metal foil, A., 1347.
- by metallic surfaces, A., 139.
- by incandescent solids, A., 12.
- polarisation of, A., 12, 889.
- by scattering, A., 994, 1207.
- influence of magnetic fields on polarised beams of, A., 994.
- collisions of, A., 890.
- Harries-Hertz collision of, A., 545.
- Born method of collision calculations for, A., 143.
- yield of, from collisions in positive ions, A., 542.
- passage of bundles of, through screens, A., 1107.
- mean free path of, A., 782.
- in gases, A., 665.
- internal degrees of freedom of, A., 666, 1106.
- Electrons, deformation of shells of, A., 143, 788.
- linking of, and quantum theory, A., 1109, 1356.
- single linking of, A., 1000.
- capture of, by ions, A., 139.
- by positive ions, A., 407.
- by α -particles, A., 280.
- by protons, A., 278.
- space charge in thermionic emission of, A., 782.
- specific charge on, A., 140, 782, 1207.
- determination of, by X-rays, A., 3.
- and wave mechanics, A., 406.
- quantum dynamics of, A., 542.
- in homogeneous electromagnetic fields, A., 889.
- interference diagram of, for celluloid and collodion, A., 994.
- heats of condensation of, on metals in ionised gases, A., 13.
- in helium, neon, and argon, excitation probabilities of, A., 1206.
- activity of, in solvents, A., 1234.
- differential and brake effect of, A., 1347.
- microscopic determination of position of, A., 889.
- distribution of, in the atom, A., 18.
- arrangement of, in organic compounds, A., 25.
- analogy of crack and, A., 994.
- conduction, and Pauli exclusion principle, A., 13.
- Dirac's, magnetic and electric moments of, A., 894.
- doubly-reflected, photographic detection of asymmetrical angular distribution of, B., 278.
- equivalent, levels for coupling of, A., 1346.
- fast, diffraction of, A., 1206.
- free, diamagnetism of, A., 278, 411.
- motion of, in electromagnetic fields, A., 281.
- high-velocity, scattering of, in hydrogen, A., 542.
- low-velocity, contact potential and reflexion coefficients of, A., 11.
- nuclear, properties of, A., 141.
- quasi-free, specific heat of, A., 889.
- rotating, theory of, A., 1106.
- slow, concentration of bundles of, A., 665.
- motion of, in gases, A., 782.
- scattering of, in argon, A., 542.
- by atoms, A., 1106.
- by gases, A., 782.
- spinning, crystal interference of, A., 1106.
- Electron-discharge, apparatus for, (P.), B., 849.
- electrode compositions for, (P.), B., 726.
- photographic emulsions for, (P.), B., 906.
- devices, cathodes for, (P.), B., 766, 849.
- cooling of, (P.), B., 123.
- reducing space charge in, (P.), B., 70.
- carbonising of metal surfaces used in, (P.), B., 682.
- low-pressure, (P.), B., 1059.
- tubes, cathodes for, (P.), B., 683.
- support of cathode in, (P.), B., 1104.
- manufacture of filaments for, (P.), B., 70.
- Electro-optic phenomena, molecular theory of, A., 1215.
- Electro-osmosis, A., 1229.
- in aqueous solutions, A., 434.
- purification of liquids by, (P.), B., 258.
- Electrophoresis, influence of the diffuse ionic layer on, A., 429.
- Electroplating, (P.), B., 305, 449.
- control of, (P.), B., 765.
- soluble anodes for, (P.), B., 934, 1104.
- causes of changes in baths for, B., 1056.
- throwing power of solutions for, B., 496, 722, 1100.
- theory of addition agents in, B., 681.
- contamination of solutions in, B., 207.
- "free cyanide" in solutions for, B., 930.
- Electroscope, Zeleny, measurement of ionisation with, A., 405.
- Electrosterilisation, A., 986.
- Electrostriction, A., 1122.
- Electrotechnics, A., 35.
- Electro-ultrafiltration, B., 909.
- Elemazulene, salts of, A., 1302.
- Element No. 61, spectrographic search for, A., 783, 890.
- No. 84, existence of, A., 890.
- No. 87, A., 1348.
- in pollucite and lepidolite ores, A., 1391.
- Elements, origin of, A., 1108.
- frequency of occurrence of, A., 407.
- building up of, in stars, A., 282.

- Elements, structure and properties of, A., 1345.
 formation of, and cosmic radiation, A., 891.
 periodic classification of, A., 890.
 spectroscopic classification of, A., 1104.
 dielectric polarisation of, A., 147.
 disintegration of, A., 889.
 artificial disintegration of, A., 1108.
 metastability of, A., 1222.
 colloidal, magnetic properties of, A., 304.
 heavy, hyperfine structure of, A., 1104.
 light, X-ray absorption edges of, A., 781.
 K α lines of, A., 888.
 absorption constants of, A., 1206.
 of the oxygen group, salt-forming characteristics of, A., 485, 486.
 transition, atomic structure of borides, carbides, nitrides, and hydrides of, A., 1215.
 of the vanadium group in volcanic rocks, A., 191.
 Elemic acid, and its derivatives, A., 1067.
 and *mono-* and *di-*bromo-, A., 960.
 α -Elemic acid, A., 847.
 Elemonic acid, and its derivatives, A., 1067.
 Ellagic acid, preparation of, A., 1273.
 and its tetra-acetyl derivative, A., 351.
 dimethyl ether, A., 1101.
 Elm scale, European. See *Gossyparia almi*.
 "Elmocid," use of, in breweries, B., 225.
Elodea, influence of p_H on vacuole concentration in stained cells of, A., 884.
 resistance of leaves of, to poisons, A., 1341.
Elodea canadensis, influence of chloroform and ether solutions on assimilation of, A., 884.
 Elutriation, classification of materials by, (P.), B., 279.
 Emanation, applications of method of, A., 890.
Embelia ribes, active principle of, A., 1061, 1188.
 Embelic acid, constitution of, A., 1061.
 constitution and synthesis of, A., 1158.
 and its derivatives, A., 1061.
 Embelin. See Embelic acid.
 Emeralds, synthetic, manufacture of, (P.), B., 677.
 Emerald green, B., 403.
 Emetics, influence of, on vomiting and blood-sugar, A., 651.
 Emetine hydrochloride, solubility of, in water, A., 558.
 Emission, cold, from unconditioned surfaces, A., 539.
 Emulsification at interfaces, A., 1124.
 Emulsification apparatus, (P.), B., 95, 867.
 Emulsifiers, (P.), B., 182, 1041.
 Emulsifying agents, (P.), B., 155, 195, 237, 290, 817, 1003, 1106.
 commercial, B., 105.
 Emulsin, A., 873, 983.
 action of, on dextrose in allyl alcohol, A., 765.
 on propyl alcohol solutions of dextrose, A., 874.
 Emulsions, preparation of, (P.), B., 32, 290, 425.
 production of, (P.), B., 12.
 apparatus for, (P.), B., 788.
 machines for, (P.), B., 280.
 measurement of particle size of, A., 302.
 effect of p_H on, A., 1367.
 effect of ultra-violet light on, A., 424.
 viscosity of, A., 681.
 influence of insoluble powders on, B., 227.
 determination of type of, A., 681.
 extraction of liquids forming, A., 58.
 asphalt, (P.), B., 679, 960.
 for roads, etc., (P.), B., 872.
 bituminous, (P.), B., 751, 960.
 production of, B., 114; (P.), B., 103, 203, 471, 528.
 for road surfaces, (P.), B., 114.
 treatment of, (P.), B., 471.
 edible, preservation of, (P.), B., 696.
 oil, B., 7.
 oil-water, manufacture of, (P.), B., 874.
 resolution of, (P.), B., 473.
 as insecticides, (P.), B., 314.
 oil-water and wax-water, B., 767.
 crude oil, breaking of, B., 7.
 resolution of, B., 1034.
 mineral oil, (P.), B., 289.
 effect of buffering on stability of, B., 88.
 paraffin, manufacture and use of, (P.), B., 333.
 petroleum, electrical conductivity of, B., 618.
 Emulsions, petroleum, breaking of, (P.), B., 383, 529, 1131.
 resolution of, (P.), B., 1038.
 pharmaceutical, B., 223.
 resin-water, preparation of, (P.), B., 769.
 rubber. See under Rubber.
 sulphur, as insecticides, (P.), B., 314.
 tar, (P.), B., 528.
 manufacture of, for roads, (P.), B., 679.
 tar-water, preparation of, (P.), B., 619.
 Enamels, synthetic resins in, B., 33.
 use of sodium silicate in, B., 841.
 zirconium opacifier for, (P.), B., 842.
 undercoating for, (P.), B., 308.
 causes of floating of pigments in, B., 32.
 for cast-iron, effect of smelter atmospheres on, B., 1095.
 aluminium fluoride in, B., 63.
 for sheet iron, B., 1011.
 acid-resistant, (P.), B., 973.
 cellulose ester or ether, manufacture of, (P.), B., 1019.
 coloured, for jewellery, B., 1050.
 porcelain, commercial fineness tests of, B., 63.
 vitreous, determination of firing range of, B., 63.
 measurement of opacity of, colorimetrically, B., 759.
 determination of alumina and boric acid in, B., 841.
 Enamel slips, consistency pipette for control of, B., 64.
 Enamel ware, manufacture of, (P.), B., 22.
 Endothermic compounds, concentration of, at high temperature, A., 910.
 Energy, conversion of, into matter, A., 1209.
 changes in, at surfaces, A., 1353, 1374.
 of solvation and of partition, A., 1010.
 electronic, of elements, A., 543.
 free, effect of unsaturation on, A., 42.
 thermal, A., 1362.
 Engines, removal of carbon deposits in cylinders of, (P.), B., 102.
 electron metal cylinders for, with oxidised aluminium coating, (P.), B., 208.
 lubricant for, (P.), B., 665.
 aircraft, steel for valve springs of, B., 494.
 Diesel, slow- and high-speed, testing of fuels in, B., 1034.
 gasoline, course of combustion in, B., 376.
 amount of lubricating oil burned in, B., 469.
 internal combustion, spectroscopic studies of combustion in, B., 829.
 removal of combustible constituents from products of combustion of, (P.), B., 833.
 detonation, spark plug position and speed of, B., 913.
 fuel for, (P.), B., 147, 193, 474, 1002.
 oxidation of fuels in, B., 8.
 hydrocarbon fuels for, (P.), B., 794.
 coal-tar oils for, B., 828.
 catalysing devices for, (P.), B., 193.
 gas-absorption apparatus for, (P.), B., 471.
 knocking in, B., 328.
 improvement of explosive materials for, (P.), B., 576.
 use of lead tetraethyl in, B., 661.
 removal of carbon deposits from, (P.), B., 833, 1000.
 treatment of exhaust gases of, to render innocuous, (P.), B., 141.
 peroxides in gases of, B., 705.
 petrol, photographic study of flames in, B., 618.
 Engineering, chemical, rôle of surface energy in, B., 1029.
 Enolates, crystalline, preparation and reactions of, A., 955.
 Enstatite, crystal structure of, A., 415.
 in relation to pyroxenes and amphiboles, A., 595.
 Enterokinase, action of light on, A., 1456.
 effect of heat on activating efficiency of, A., 521.
 Entropy, A., 553.
 effect of unsaturation on, A., 42.
 of gases, A., 307.
 of moist gases, A., 417.
 of polyatomic molecules, A., 800.
 of solids at absolute zero, A., 675.
 Enzymes, production of, (P.), B., 87.
 model for separation of substrate and, in cells, A., 765.
 histochemistry of, A., 1455.
 action of light on, A., 391, 1332.
 effect of mercury-arc radiation on, A., 1331.
 purification of solutions of, B., 363.
 steric selection by, A., 392.
 measurement of hydrolysis by, with dilatometer, A., 983.

- Enzymes**, hydrolysis of esters by, A., 262, 392.
 asymmetric hydrolysis of esters by, A., 874.
 hydrolysis of polypeptides by, A., 124, 767, 768.
 proteolysis by, A., 984.
 action of dyes on, A., 765, 983.
 protection of, against action of metals, (P.), B., 822.
 effect of salt ions on, A., 876.
 in relation to blood groups, A., 1320.
 influence of serum on, A., 754.
 toxicity to, and trypanocidal action, A., 1188.
 sterilisation of, in powder form, B., 511.
 with carbon disulphide, B., 779.
 complex "defence," properties of, A., 1191.
 cyclising, A., 1089.
 diastatic, evaluation of preparations of, B., 314.
 in skin and blood, A., 1447.
 fat-hydrolysing, action of hormones on, A., 1194.
 pancreatic, determination of, in duodenal juice, A., 862, 1082.
 placental, A., 249.
 proteolytic, A., 655, 1190, 1456.
 production of, (P.), B., 87.
 in malt preparations, B., 693.
 in serum, A., 641, 1080.
 effect of degradation products on action of, A., 262.
 effect of heavy metals and their complexes on action of, A., 1331.
 action of, on polypeptides, A., 984.
 substrates for detection of activity of, A., 874.
 determination of, nephelometrically, A., 1090.
 pulverised, sterilisation of, B., 608.
 purinolytic, of the human organism, A., 263.
 of human embryos, A., 111.
 respiratory, A., 1455.
 determination of, A., 1331.
- Enzymes**. See also:—
- | | |
|------------------------|-----------------------|
| Allantoinase. | Lecithinase. |
| Amylase. | Metaoxidase. |
| Amylosynthase. | Nucleotidase. |
| Arginase. | Oxidoreductase. |
| Carboligase. | Pectase. |
| Catalase. | Pepsin. |
| Chondrosulphatase. | Peroxidase. |
| Collagenase. | Phosphatase. |
| Dehydrogenase. | Protaminase. |
| Emulsin. | Protease. |
| Enterokinase. | Proteinase. |
| Erepsin. | Prothrombase. |
| Esterase. | Succinodehydrogenase. |
| Fumarase. | Sulphatase. |
| α -Glucosidase. | Tannase. |
| Glucosulphatase. | Trypsin. |
| Glycolase. | Tyrosinase. |
| Glyoxalase. | Tryptase. |
| Hydrogenase. | Urease. |
| Invertase. | Uricase. |
- Enzyme action**, A., 262.
 theory of, A., 652.
 and structure, A., 983, 1455.
 mechanism of, A., 123.
 Schutz equation in kinetics of, A., 520.
 molecular statics of, A., 1089.
 contraction constants of substrate in, A., 1331.
- Ephedra**, Indian species, seasonal variations in alkaloid content of, B., 610.
- Ephedrenines**, hydroxy-, physiological action of, A., 871.
- Ephedrine**, solution of, in oil, (P.), B., 91.
 effect of sunlight on solutions of, B., 318.
 production of inhalant from, (P.), B., 366.
 from *Taxus baccata*, A., 1200.
 effect of, on blood constituents, A., 981.
 synthetic bases related to, A., 350.
 detection of, colorimetrically, A., 724, 1079.
- Ephedrine**, 3:4-dihydroxy-, physiological action of, A., 517.
- dl*-Ephedrine**, ω -hydroxy-, and its hydrochloride, A., 350.
- l*-Ephedrine**, distinction between ephedrine and, microchemically, A., 1319.
- Ephesite** from S. Africa, A., 595.
- Ephetone**, distinction between *l*-ephedrine and, microchemically, A., 1319.
- Epiborneol dinitrobenzoates**, A., 1068.
- Epicamphor**, 2-hydroxy-, A., 1068.
- Epicamphors**, and their bromo-derivatives, A., 1161.
- Epichlorohydrin**, action of, with alkali and ammonium halides, A., 1132.
- Epidermis**. See Skin.
- Epidote**, crystal structure of, A., 415, 1116.
- Epilote-zoisite**, crystallographic relation between orthite-allanite and, A., 289.
- Epilepsy**, A., 864.
 carbamide content of cerebrospinal fluid in, A., 977.
- Epsomites**, pink, A., 1029.
- Equation** for perfect gases, A., 429.
 of indifferent states, A., 1363.
 Eötvös', A., 896.
 linear wave, hyperfine structure as test of, A., 665.
- Equation of state**, A., 1362.
 constants of, A., 1117.
 in relation to electron properties, A., 994.
 connexion between inner friction and, A., 156.
 of gases and liquids, A., 792.
 for easily-liquefied hydrocarbons, A., 292.
 Beattie-Bridgeman, A., 295.
 van der Waals', A., 31, 896.
 constants of, A., 1117.
 volume correction in, A., 553.
 derivation of expression $\frac{a}{v^2}$ for, A., 1216.
- Equilibrium** of real gases, thermodynamics of, A., 39.
 of binary mixtures, A., 1127.
 in binary systems under pressure, A., 1370.
 of mixed crystals, A., 310.
 of non-metallic systems, A., 1235.
 in osmosis, A., 560.
 homogeneous, graphic representation of, A., 683.
 inner, effect of intensive drying on, A., 799.
 tautomeric, determination of, in various solvents, A., 1234.
 and "intermediate stage," A., 234.
 thermodynamic, in a static Einstein universe, A., 564.
 univariant, at an invariant point, A., 430.
- Erbium oxide**, pure, preparation of, A., 813.
- Erepsin**, homogeneity of, A., 125.
 hydrolysis of polypeptides by, A., 124, 767, 768.
 intestinal, pH optimum for action of, A., 1191.
 hydrolysis of leucyldecarboxyglycine by, A., 1456.
- γ -Ergostanol**, A., 219.
- Ergosterol chloroacetate**, A., 724.
- α - and *iso*- γ -Ergosterols**, and their acetates, A., 219.
- Ergosterol**, purification of, A., 618; (P.), B., 501.
 ultra-red absorption spectrum of, A., 989.
 activation of, by soft X-rays, A., 806.
 with radon, A., 1098.
 influence of solvents on, A., 1197.
- irradiation** of, A., 1412.
 influence of wave-length on, A., 580.
 solar irradiation of, A., 694.
 separation of irradiation products of, A., 881.
 toxicity of irradiation products of, A., 532.
 isomerisation of, by Friedel-Crafts reaction, A., 1412.
 and its derivatives, A., 1051.
 conversion and action of, A., 320.
 relationship of saturated derivatives of sitosterol and, A., 219.
 and its derivatives, reaction of, with maleic anhydride, A., 840.
 action of ozone on, A., 531.
 in the human brain, A., 642.
 activated, heat of combustion of, A., 1465.
- irradiated**, A., 320, 1098.
 pharmacological classification of, A., 659.
 stability of, A., 881.
 and cod-liver oil as antirachitic agents, A., 1197.
 antirachitic and toxic factors in, A., 773.
 toxic effects of, A., 129.
 calcifying action of, A., 532.
 in tuberculosis, A., 659.
 calcifying and toxic actions of, A., 532, 773.
 effect of, on ash content of femora, A., 773.
 on gastric and pancreatic juice, A., 1197.
 hypercalcæmia and hyperphosphatæmia from, A., 1338.
 excess calcium in hyperglycæmia induced by, A., 773.
 action of, on tissue phosphatases, A., 129.
 assay of, A., 399.
 detection of, biologically, A., 773.

- Ergosterol, yeast, isolation of α -dihydroergosterol from, A., 618.
 Ergosterols, and their derivatives, A., 1412.
*iso*Ergosterols, relation of, to vitamin-D, A., 129.
 Ergot, decomposition and preservation of extracts of, A., 993.
 pharmacology of, B., 742.
 biological assay of, A., 981.
 Ergot alkaloids, A., 1171.
 biological and spectroscopic tests on, B., 861.
 determination of, colorimetrically, B., 135.
 Ergot oil, constitution of hydroxyoleic acid from, A., 602.
 Ergotamine, physiological effect of, A., 760.
 activity of ergotoxine and, A., 871.
 effect of, on blood-sugar in diabetes, A., 977.
 on blood-sugar and arecoline hyperglycemia, A., 1320.
 Ergothionine in blood, A., 1440.
 Ergotinine, A., 1171.
 ψ -Ergotinine, A., 1171.
 Ergotoxine, activity of ergotamine and, A., 871.
 Erucic acid, paraffin of, A., 149.
 formation of brassic acid from, by action of nitrous acid, A., 1272.
 Erucylacetic acids, and their ethyl esters, A., 65.
 Erucylmalonic acid, ethyl ester, A., 65.
 Erythema, light, mechanism of, A., 694.
 Erythritol, esterification of, A., 1403.
 fermentation of, by symbiotic bacteria, A., 1335.
 Erythrocytes. See Blood-corpuscles, red.
 Erythrocytosis, peripheral, A., 375.
 Erythrol, A., 274.
 Esparto fibre, production of, B., 713.
 Esters, preparation of, A., 822.
 catalytic production of, by heating alcohols, (P.), B., 334.
 hydrolysis of, A., 1242.
 by enzymes, A., 262, 392, 874.
 decomposition of, by anhydrous zinc chloride, A., 1034.
 addition of alkali alkoxides to, A., 196.
 aliphatic, condensation of, with ketones, A., 605.
 complex, containing a trichloromethoxyl group, reaction of, A., 462.
 unsaturated, addition of sodium enol-alkylmalonic and -alkyl-cyanoacetic esters to, A., 603.
 $\alpha\beta$ -unsaturated, condensation of, with cyanoacetamide, A., 964.
 Esters, α -chloro-, reaction of, with aldehydes and ketones, A., 844.
 Esterase, action of, compared with acid catalysis, A., 520.
 inhibition of, by excess of substrate, A., 261.
 hydrolysis of esters and lactones by, A., 392.
 liver, configuration-specificity of, A., 262.
 action of, A., 123.
 human liver, stereochemical specificity of, A., 261.
 action of strychnine on specificity of, A., 874.
 Esterification, with mixed anhydrides and mixtures of anhydrides, A., 934.
 in presence of anhydrous salts, A., 1017.
 with solid catalysts in the gaseous phase, A., 1135.
 Etching apparatus, electrolytic, holding devices for, (P.), B., 767.
 Etching baths, analysis of, B., 536.
 "Eternit," thermal conductivity coefficient of, B., 760.
 Ethane, specific heat and free energy of, A., 912.
 viscosity of, A., 1118.
 velocity coefficients for thermal dissociation of, A., 1240.
 slow combustion of, A., 45, 1147.
 oxidation of, A., 1240.
 in air, A., 1371.
 by combustion, A., 1030.
 analysis of mixtures of hydrogen, methane and, A., 54, 450.
 Ethane, $\alpha\beta$ -dichloro-, electron reflexion in, A., 665.
 molecular polarisation of, A., 147, 546, 786.
 $\alpha\alpha\beta$ -trichloro-, manufacture of, (P.), B., 385, 621, 917.
 tetrachloro-, preparation of, B., 962.
 catalytic preparation of, B., 796.
 effect of, on metals, B., 206.
 determination of water in, A., 1256.
 hexafluoro-, A., 601.
 Ethanes, dichloro-, *cis*- and *trans*-isomeric, stability of, A., 1356.
 Ethane- $\alpha\alpha$ -disulphonic acid, salts, A., 1033.
 Ethane- $\alpha\beta$ -disulphonic acid, sodium salt, A., 1395.
 Ethane- α -phthalimido- $\alpha\beta$ -tricarboxylic acid, ethyl ester, A., 76.
 Ethane- α -sulphonic acid, potassium salt, and α -chloro-, and its salts and derivatives, A., 334.
 Ethanesulphonyl chloride, β -bromo-, action of, on amines, A., 1033.
 2-Ethenylamino-4-butylphenol, A., 1434.
 3-Ethenylamino-*p*-cresol, 6-nitro-, A., 1434.
 2-Ethenylamino-4-ethylphenol, and 5-nitro-, A., 1434.
 2-Ethenylamino-4-heptylphenol, and 5-nitro-, A., 1434.
 2-Ethenylamino-4-propylphenol, and 5-nitro-, A., 1434.
 Ether. See Ethyl ether.
 Ethers, manufacture of, (P.), B., 917.
 autoxidation of, A., 334.
 catalysis by alumina and zinc oxide of disproportionation of, A., 710.
 substances related to, A., 197, 710, 1033.
 aliphatic, A., 462.
 aromatic, orientation in, A., 1411.
 addition of, to unsaturated compounds, A., 1155.
 thermal decomposition of, under high hydrogen pressure, A., 1152.
 gaseous, decomposition of, catalytically, A., 196.
 mixed, phenolic decomposition of, A., 691.
 bromine derivatives of, A., 615.
 phenolic, synthesis of, A., 346.
 condensation of, with methylolamides, A., 217.
 soluble, manufacture of, from vegetable materials, (P.), B., 582.
 unsaturated, manufacture of, (P.), B., 667.
 $\alpha\beta$ -unsaturated, synthesis of, A., 710.
 Ethers, halogeno-, action of magnesium on, A., 819.
 β -halogeno-, synthesis of, and their synthetic application, A., 710.
 imino-, production of, (P.), B., 386, 667.
 Ether-acids, A., 197.
 Ethereal sulphates, effect of parathyroidectomy on formation of, A., 382.
 Ethinylfenchyl alcohol, and its silver salt, A., 1068.
 Ethoxide, sodium, addition of, to formic esters, A., 196.
 stannic, A., 323.
 ϵ -Ethoxy-*n*-amyl alcohol, A., 1033.
 3-Ethoxybenzaldehyde, 4-hydroxy-, manufacture of, (P.), B., 622.
 3-Ethoxybenzoic acid, 4-hydroxy-, A., 838.
p-Ethoxybenzophenone, oximes of, A., 844.
 4-Ethoxy-4'-benzoyloxydiphenyl, A., 954.
 α -Ethoxybenzylideneacetoacetic acid, copper salt and ethyl ester, A., 822.
 10-Ethoxy-9-benzylidene-1:4-dimethyl-9:10-dihydroanthracene, A., 341.
 α -Ethoxybenzylidenemalonic acid, copper salt and ethyl ester, A., 822.
 β -Ethoxy-2nd-butene, A., 710.
 δ -Ethoxy-*n*-butyl alcohol, A., 1033.
 δ -Ethoxy-*n*-butyl chloride, A., 1033.
 4'-Ethoxycamphoranilic acid, 2:6'-dinitro-, A., 626.
 β -Ethoxycinnamitriles, A., 222.
 3-Ethoxy-*p*-cresol, and its derivatives, A., 838.
 3-Ethoxy-2-diazo-1-keto-1:2-dihydrobenzene, 5:6-dinitro-, A., 478.
 γ -Ethoxyephedrine, A., 350.
 β -Ethoxyethoxyacetic acid, A., 197.
N-Ethoxyethylamine, *N*-nitroso-, A., 1286.
 ω -Ethoxyethylaminopropiophenone, A., 224.
 α -Ethoxyethylideneacetoacetic acid, copper salt and ethyl ester, A., 822.
 α -Ethoxyethylidenemalonic acid, copper salt and ethylester, A., 822.
 β -Ethoxyethylmalonic acid, ethyl ester, A., 710.
 β -Ethoxyethylvinyl sulphide and mercurichloride, A., 464.
 2-Ethoxyhydrindene, 1-bromo-, A., 355.
 4-Ethoxy-4'-hydroxydiphenyl, A., 954.
 Ethoxyl, replacement of fluorine by, A., 1284.
 determination of, volumetrically, A., 107, 246.
 Ethoxymethyl α -chloro- γ -halogenoisopropyl ethers, A., 621.
 4-Ethoxy-3-methylbenzoic acid, methyl ester, A., 486.
 6-Ethoxy-2-methylquinoline, 4-chloro-, and 4-hydroxy-, hydrochloride of, A., 1430.
p-Ethoxyphenyl arsinosulphide, A., 1404.
p-Ethoxyphenylallopahnic acid, ethyl ester, A., 346.
p-Ethoxyphenylbiuret, A., 346.
p-Ethoxyphenyl $\alpha\beta$ -dibromo- β -phenylethyl ketones, A., 224.
p-Ethoxyphenylcarbamide, derivatives of, A., 346.
 6-Ethoxy-2-phenylquinoline, 4-amino-, and its hydrochloride and acetyl derivative, A., 965.
 6-Ethoxy-2-phenylquinoline-4-carboxylic acid, and its derivatives, A., 965.

- 6-Ethoxy-2-phenylquinolylaminoformic acid, ethyl ester, A., 965.
 6-Ethoxy-2-phenylquinolylcarbimide, A., 965.
 2-Ethoxypyridine, 5-nitro-, A., 234.
 2-Ethoxyquinoline-4-carboxylic acid, diethylaminoethyl ester, A., 1167.
 6-Ethoxyquinoline-4-carboxylic acid, methyl ester, A., 237.
 6-Ethoxythionaphthen-2:3-dicarboxylic acid, and its anhydride, A., 1163.
 6-Ethoxythionaphthenquinone, and its derivatives, A., 1163.
 4-Ethoxy-3-tolyl-1:2:3:4-tetrahydroquinazolines, 2-thio-, A., 842.
 Ethyl, free, existence of, A., 1215.
 Ethyl alcohol, B., 86.
 synthesis of, from hydrogen and carbon monoxide, B., 833.
 manufacture of, (P.), B., 133.
 from carbon monoxide and hydrogen, (P.), B., 334.
 from fermentation of bananas, B., 459.
 from cane sugar molasses, B., 217.
 from waste sulphite liquors, B., 387.
 potash from, B., 271.
 purification of, with activated charcoal, B., 942.
 automatic distillation of, A., 195.
 distillation and rectification of, (P.), B., 177.
 rectification of, (P.), B., 694.
 theory of, B., 991.
 ultra-violet absorption spectra of, A., 1110.
 relation between refraction and specific gravity of, B., 963.
 refractive index tables for aqueous mixtures of, B., 412.
 conductivity of univalent salts in, A., 43.
 dielectric constants of mixtures of water and, A., 1223.
 thermal properties of, A., 912.
 specific heat of mixtures of water and, A., 1003.
 freezing and boiling points of mixtures of methyl alcohol and, A., 901.
 partial pressure of vapour of, in inert gases, A., 677.
 adsorption of water by silica gel from mixtures with, A., 794.
 solutions of, in benzene and water, A., 1225.
 azeotropy of mixtures of benzene and, A., 1004.
 solubility of fats in, B., 500.
 gels, (P.), B., 150*.
 equilibrium of, with acetaldehyde in presence of catalysts, A., 1135.
 effect of lithium chloride in solution on, A., 40.
 effect of solvent on acetylation of, by acetic anhydride, A., 1240.
 decomposition of, on manganous compounds, A., 1248.
 effect of water on decomposition of, with nickel catalyst, A., 46.
 dehydration of, (P.), B., 822, 942, 965.
 with barium oxide, B., 942.
 denaturing of, (P.), B., 651.
 oxidation of, in air, A., 1372.
 catalytic oxidation of, A., 895.
 by chromic acid, A., 1245.
 reduction of chloroplatinates by, A., 803.
 action of, with 2:6-dichloro-4-methylquinol, A., 1153.
 production of esters from, (P.), B., 1086.
 as motor fuel, B., 53.
 production of motor fuels containing, B., 232.
 bactericidal properties of, B., 1118.
 sensitivity to poisons after treatment with, A., 121.
 combustion of, by poikilotherms, A., 1184.
 utilisation of, by man at high altitudes, A., 512.
 in blood, A., 649.
 oxidation of, by blood, A., 641.
 in animals, and its determination, A., 1327.
 exhalation of, in breath, A., 649.
 determination of intoxication with, by cerebrospinal fluid analysis, A., 1186.
 absolute, preparation of, A., 333.
 manufacture of, B., 412, 738; (P.), B., 363, 694.
 in converted distillery plant, B., 778.
 anhydrous, preparation of, and detection and determination of water therein, A., 61.
 production of, (P.), B., 57.
 denatured, manufacture of, B., 563.
 freezing and flow points of, B., 105.
 power, production of, from *Eccaria agallocha*, B., 1024.
 determination of water in, B., 708.
 detection and determination of water in, B., 289.
 determination of, by the immersion refractometer, B., 963.
 microchemically, A., 752, 1318.
 oxidimetrically, A., 990, 1267.
 Ethyl alcohol, determination of, from specific gravity, B., 942.
 in alcoholic beverages, B., 859.
 in blood, A., 248, 1440.
 in fermentation mixtures, B., 1117.
 in its mixtures with methyl alcohol, B., 874.
 in pharmaceutical preparations, B., 273.
 in tinctures and wines, B., 1026.
 forensic determination of, A., 120.
 determination of butyl chloride and ethyl phthalate in, B., 963.
 determination of hydrocarbons in, containing acetone, B., 963.
 Ethyl alcohol, $\beta\beta\beta$ -tribromo-, preparation of narcotics from, (P.), B., 654.
 Ethyl arsinosulphide, β -hydroxy-, and its acetyl derivative, A., 1404.
 bromide vapour, refraction and dispersion of, A., 1355.
 $\delta\epsilon$ -bromo- $\delta\Delta^a$ -heptenyl-, $\delta\Delta^a$ -hexenyl-, and $\delta\Delta^a$ -pentenyl ethers, A., 709.
 $\alpha\beta$ -dibromo- and chloro- *n*-butyl and -propyl ethers, A., 709.
 n-butyl ether, β -bromo-, and β -chloro-, A., 710.
 butyl sulphite, A., 934.
 chloride, electrical moment of, A., 285.
 fixation of, by blood, A., 1087.
 α -chloroisopropyl ether, A., 62.
 chlorovinyl sulphides, β -chloro-, oxidation of, and their sulphone and sulphoxide derivatives, A., 64.
 β -chlorovinyl and vinyl sulphides, $\alpha\beta$ -dichloro-, A., 1394.
 esters, manufacture of, (P.), B., 666.
 Ethyl ether, allotropy of, A., 416.
 dielectric constants of mixtures of hydrogen peroxide and, A., 793.
 change in electrical polarisation of, with temperature, A., 285.
 change of density of, with temperature, A., 417.
 partial pressure of vapour of, in inert gases, A., 677.
 automatic distillation of, A., 195.
 decomposition of, in contact with platinum and tungsten, A., 693.
 explosion due to peroxide in, A., 819; B., 236.
 effect of, on respiration, A., 980.
 bactericidal properties of, B., 1118.
 toxicity of chloroform vapour and, to bacteria, A., 267.
 action of, on oxido-reduction in tissues, A., 649.
 pharmacological effect of impurities in, A., 1452.
 detection of impurities in, B., 530.
 detection of aldehydes in, B., 194.
 determination of, and its narcotic dose, A., 980.
 Ethyl α -glyceryl ether, diphenylcarbimide derivative, A., 62.
 hydrogen peroxide, α -hydroxy-, A., 1267.
 hydrogen sulphate, formation of, A., 339.
 iodide, reaction velocity of triethylamine and, in different solvents, A., 1241.
 elimination of, after inhalation, A., 980.
 determination of, in alveolar, inspired and expired air, A., 857.
 mercaptan, testing of gas mains with, B., 467.
 and sulphide, dielectric constants of benzene solutions of, A., 1113.
 nitrate, action of, on phenylhydrazine, in presence of sodium ethoxide, A., 345.
 silicate and titanate, use of, in paint manufacture, B., 675.
 sulphide in dog's urine, A., 976.
 vinyl sulphide, β -chloro-, A., 464.
 Ethylacetylene, synthesis and pyrolysis of, A., 332.
 β -Ethylacetaldehyde. See $\Delta\alpha$ -Pental.
 Ethylallene, A., 1147.
 Ethylamine, decomposition of, A., 174.
 reaction of, with isopropylethylene oxide, A., 204.
 hydrogen sulphide, A., 1041.
 Ethylamines, condensation of, with picoline and quinaldine, A., 964.
 1-Ethylaminobenzthiazole, and 5-chloro-, and 5-chloro-3-bromo-, and their derivatives, A., 969.
 β -Ethylaminobutyric acid, and its derivatives, A., 76.
 β -Ethylaminohexic acid, ethyl ester, and its hydrochloride, A., 76.
 2-Ethylamino-5-hydroxy-1:3:4-thiodiazine, and its acetyl derivative, A., 635.
 1-Ethylamino-5-methylbenzthiazole, and its derivatives, A., 969.
 5-Ethylamino-3-methylhydantmethylamide, A., 852.
 1-Ethylamino-2-nitronaphthalene, A., 342.
 β -Ethylamino-octic acid, and its derivatives, A., 76.
 α -Ethylaminophenylarsinic acid, β -hydroxy-, A., 1173.
 β -Ethylamino- α -phenylcinnamic acid, methyl ester, A., 369.

- ̢-Ethylaminovaleic acid hydrochloride, A., 1306.
 Ethylaminoboron trifluoride, action of lithium on, A., 77.
 Ethyl-*n*-amyl- α -methylhexylcarbinol, A., 241.
 2-Ethyl-*n*-amylquinoline picrate, A., 1167.
 Ethylaniline, benzenesulphonyl derivative, A., 463.
N-Ethylanilinoacetone phenylhydrazone, A., 1404.
 Ethylanthracene-2-carboxylic acid, A., 619.
 5-Ethylbarbituric acid, 5-bromo-, A., 1074.
 Ethylbenzenes, α - and β -chloro-, catalytic hydrogenation of, A., 1269.
 β -Ethylbutaldehyde, α -hydroxy-, and its derivatives, A., 461.
 β -Ethylbutan- β -ol, $\alpha\alpha$ -dichloro-, A., 461.
 β -Ethylbutylaminobutyric acid, ethyl ester, A., 76.
 α -Ethyl-*n*-butyric acid, α -cyano-, ethyl ester, action of magnesium phenyl bromide on, A., 205.
 $\alpha\beta$ -dicyano-, ethyl ester, A., 1417.
l- α -Ethylbutyric acid, ethyl ester, A., 709.
 β -Ethyl-*n*-butyronitrile, β -hydroxy-, and its chloro-derivative, A., 1403.
 Ethyl Capri blue, oxidation-reduction potential of, A., 1013.
 β -Ethylcarbamide, iodo-, A., 832.
N-Ethylcarbazole, synthesis of, A., 1307.
 Ethylcarveol acetate, A., 466.
 1- α -Ethyl- β -cellobiosido-6-glucose decaacetate, A., 716.
 α -Ethylcinnamaldehyde, and its semicarbazone, A., 485.
 β -Ethylcinnamyl alcohol, and its derivatives, A., 724.
 Ethylcrotononitriles, A., 1403.
 Ethylcyanoacetic acid, ethyl ester, formation of azo-derivatives and hydrazones from, A., 212.
 Ethyldauricine ethobromide, and its platinum salt, A., 243.
 α -Ethyldauricinemethylmethine, and its methiodide, A., 243.
 1-Ethyldecaahydronaphthalene, A., 1044.
 Ethyldi-3-acetyl-2:4-dimethylpyrrolmethane, A., 494.
 Ethyl-5:6:5':6'-dibenz- γ -cyanine iodide, A., 741.
 10-Ethyl-5:10-dihydrophenarsazine dihydroxide, A., 373.
 10-Ethyl-9:10-dihydrophenarsazine dihydroxide and oxide, A., 637.
N-Ethyldiketopiperazine, β -hydroxy-, A., 1154.
N-Ethyldiphenylamine, 2-nitro-4-amino-, hydrochloride and 4-chloro-2-nitro-, A., 1307.
 α -Ethyldistyryl ketone, *mm'*-dihydroxy-, A., 485.
 Ethylene, formation of, by electric discharge in mixtures of hydrogen and methane, A., 441.
 use of phosphoric acid in preparation of, A., 193.
 manufacture of, from acetylene, (P.), B., 148.
 polymerisation of, A., 436.
 infra-red absorption spectrum of, A., 1352.
 action of high-speed cathode rays on, A., 1379.
 photochemical interaction of ammonia and, A., 442.
 photochemical interaction of amines and, A., 1251.
 heat of hydrogenation of, A., 42.
 adsorption of, (P.), B., 148.
 by wood charcoal, silica gel and alumina, A., 419.
 viscosity of, A., 32.
 equation for mixtures of argon and, A., 554.
 catalytic hydrogenation of, A., 1374.
 decomposition of, by heat, under high pressure, A., 1147.
 fission and condensation of, A., 596.
 oxidation of, in air, A., 1371.
 reaction of, with halogens, A., 1374.
 with oxygen, A., 1031, 1372.
 induction of reaction between chlorine and benzene by, A., 610.
 production of liquid hydrocarbons from, A., 60.
 derivatives, influence of substituents on addition of bromine to, A., 1267.
 orientation in addition of halogens and hydrogen halides to, A., 1391.
 dichloride, production of, B., 962.
 electric moment of, A., 1113.
 and chlorobromide, electric moments of, in heptane, A., 786.
 chlorohydrin, A., 933.
 preparation of, A., 598.
 decomposition of, by alkali, A., 315.
 toxicity of, A., 259.
 cyanohydrin, methyl ether, A., 206.
 iodide, photochemical reaction of, with iodine, A., 180, 806.
 effect of light on determination of, B., 575.
 Ethylene, dichloro-, manufacture of, (P.), B., 796.
 $\alpha\beta$ -dichloro-, production of, (P.), B., 917.
 trichloro-, preparation of, B., 962.
 effect of, on metals, B., 206.
 disinfectant action of, B., 700.
 Ethylenes, substituted, action of bromine on, A., 1281.
 chloro-, Raman spectra and chemical constitution of, A., 1211.
 cis- and *trans*-dichloro-, equilibrium of vapours of, A., 430, 1356.
 Ethylene glycol and its homologues, production of, (P.), B., 1086.
 Raman spectrum of, A., 893, 1211.
 freezing and flow points of, B., 105.
 solubilities of salts in, and its mixtures with water, A., 558.
 mutual solubility of esters and, A., 677.
 decomposition of, in presence of catalysts, A., 61.
 and its derivatives, pharmacology of, A., 1186.
 irritant and toxic actions of, A., 763.
 compounds of titanium with, B., 675.
 distribution of higher fatty acids in mixed esters of, A., 935.
 trichloroacetate methyl ether, A., 206.
 dinitrate, manufacture of, (P.), B., 319.
 di-*p*-nitrophenylcarbamate, A., 709.
 Ethylene glycol, nitro-, determination of maximum detonation velocity of, B., 783.
 Ethylene linking, polarisation of, A., 473.
 addition of phenols to, A., 346, 1288.
 Ethylene oxide, reaction of, with phenol, A., 477.
 toxicity of, to plants, B., 410.
 fumigation of dried fruits with, B., 652.
 destruction of pests by, in presence of food, B., 904.
 destruction of pests and germs with mixture containing, (P.), B., 226.
 determination of, in air, B., 180.
 Ethylenediaminodiethylgold salts, A., 78.
 Ethylenediaminebisquinoline methiodide, A., 751.
s-Ethylenedi-*p*-bromophenyl sulphide, A., 1409.
s-Ethylenedi-*p*-bromophenylsulphone, A., 1409.
 Ethylenesulphonic acid, α -iodo-, potassium salt, A., 1391.
 Ethylenetetraacetic acid, ethyl ester, preparation of, A., 824.
 Ethylenedithiodiacetic acid, α - and β -dioxides from, A., 1048.
 Ethylenic compounds, constitution of, and Raman effect, A., 284.
 oxidation of, A., 1375.
 stereoisomeric, solubility of, in ethylenic solvents, A., 65.
 cis-trans, differentiation between, by catalytic hydrogenation, A., 934.
 3-Ethylflavone, 5:7-dihydroxy-, A., 963.
 Ethylglucoside, chloro-, A., 778.
 Ethylguaicol, derivatives of, B., 660.
 4-Ethylguaicol, synthesis of, A., 953.
 Ethylguanidine, β -hydroxy-, condensation of, with ethyl acetate, A., 1074.
l- γ -Ethylheptane, α -bromo-, A., 821.
l- γ -Ethylheptan- α -ol, A., 821.
l- β -Ethyl-*n*-heptoic acid, and its ethyl ester, A., 821.
 γ -Ethylhexane, α -bromo- and α -chloro-, A., 821.
d- γ -Ethylhexan- α -ol, A., 821.
 α -Ethylhexoic acid, benzyl ester, A., 1269.
 β -Ethylhexoic acids, and their derivatives, A., 821.
 β -Ethyl- Δ^8 -hexylidenecyclohexylamine, A., 343.
 α -Ethylhydroxyisobutylaminopropionic acid, derivatives of, A., 830.
 α -Ethylhydroxyethylaminopropionic acid, and its derivatives, A., 830.
 Ethyl-*mono*- and -*di*- β -hydroxy- γ -methyl-*n*-butylamines, and their salts, A., 204.
 2-Ethyl-4-(3':4'-dihydroxyphenyl)thiazole, β -amino-, sulphate, A., 748.
 Ethylidene peroxide, A., 1268.
 3-Ethylideneamino-2-phenyl-4-quinazolone, A., 1074.
 4:6-Ethylideneglucose, and its osazone, A., 1038.
 Ethylidene-*p*-methylacetophenone, dibromide, A., 1427.
 Ethylidene- β -methyl-*d*-glucoside, and its derivatives, A., 939, 1038.
 2-Ethylimino-4-keto-6-methyltetrahydropyrimidine, β -hydroxy-, and its salts, A., 1074.
 Ethyldiiodostibine, action of halogens on, A., 183.
 Ethylmalonic acid, β -cyano-, ethyl ester, A., 1397.
 α -Ethylmercuthiobutyric acid, A., 637.
p-Ethylmercuthiolbenzenesulphonic acid, A., 637.
p-Ethylmercuthiolbenzoic acid, A., 637.
p-Ethylmercuthiolphenylacetic acid, A., 637.
 Ethylmercuthiosalicylic acid, A., 637.
 3-Ethyl-4-methylcoumarin, 7-hydroxy-, and its derivatives, A., 962.
 Ethyl α -methylhexyl ketone, A., 241.
N-Ethylmorpholine, β -hydroxy-, and its salts, A., 1075.
 1-Ethynaphthalene, and its hydrogenation products, A., 1044.

- 2-Ethyl-naphthalene, and its di-, tetra-, and deca-hydro-derivatives, A., 949.
- 1-Ethyl- β -naphtha-2-quinoline, A., 741.
- 2-Ethylperinaphth-1:3-diketohydrindene, 5-hydroxy-, A., 487.
- 1-Ethyl- β -naphthiazolin, 2-imino-, and its hydrobromide, and 2-nitrosoimino-, A., 1076.
- 1-Ethyl- β -naphthiazolone, A., 1076.
- Ethyl- α -naphthol-orange, A., 344.
- δ -Ethyl-nonanes, and α -bromo-, A., 821.
- Ethyl-nonanols, A., 821.
- 1- γ -Ethyl-octane, α -bromo-, A., 821.
- 1- β -Ethyl-octoic acid, and its ethyl ester, A., 821.
- Ethylloxanthrone-2-carboxylic acid, and its benzoyl derivative, A., 619.
- β -Ethyl-pentenonitriles, and their amide, A., 472.
- γ -Ethyl- $\Delta\alpha$ -pentinen- γ -ol, silver salt, A., 1393.
- 2-Ethylphenol, 4-nitro-, A., 1062.
- 4-Ethylphenol, 5-nitro-2-amino-, and its acetyl derivative, A., 1434.
- 5-Ethylphenylarsinic acid, 4-amino-2-hydroxy-, and its acetyl derivative, and 2:4-di-hydroxy-, and their sodium salts, A., 1434.
- Ethylphenylpropionic acids, and their silver salts and ethyl esters, A., 351.
- N-Ethylpiperidine, β -hydroxy-, salts of, A., 86.
- N-Ethyl-2-piperidone, and its salts, A., 1306.
- β -3-Ethyl-4-piperidylpropionic acid, ethyl ester, hydrogen *d*-tartrate, A., 1433.
- p*- α -Ethylpropylaminophenol, nitroso-derivative, and its hydrochloride, A., 837.
- 10- α -Ethylpropyl-5:10-dihydrophenarsazine, A., 1435.
- ϵ -Ethyl-5-propyl- Δ^8 -nonen-6-one, A., 714.
- 2-Ethyl-4-propylpyrrole-3:5-dicarboxylic acid, ethyl ester, A., 747.
- 1-Ethylpyridinium bromide, molecular salt of, with benzidine, A., 740.
- 1-Ethyl-2-pyridone, 5-iodo- and 5-nitro-, A., 234.
- 3-Ethylpyridyl-4-acrylic acid, hydrochloride, A., 1433.
- Ethylpyrogallol, synthesis of, A., 617.
- 1-Ethylpyrrole, β -chloro- and β -cyano-, A., 365.
- 2-Ethylpyrrole-5-aldehyde, A., 739.
- 2-Ethylpyrrole-5-carboxylic acid, derivatives of, A., 739.
- 2-Ethylpyrrolidine, derivatives of, A., 942.
- 2-Ethylpyrroline chloroaurate, A., 849.
- 2-Ethylquinoline, preparation of, and its salts, A., 98, 235.
- 4-Ethylresorcinol, and its dibromo- and dichloro-derivatives, A., 217.
- Ethylretene, A., 1297.
- Ethylretenequinone, A., 1297.
- Ethyl- ψ -strychnine, A., 1312.
- α -Ethylstyryl methyl ketone, *p*-hydroxy-, A., 485.
- Ethylsulphone, A., 1409.
- β -Ethylsulphonylethyl alcohol, A., 86.
- p*-Ethylsulphonylphenylhydrazine, A., 1409.
- 1-Ethylthiobromine, β -chloro- and β -hydroxy-, and its derivatives, A., 239.
- 3-Ethylthiol-4:5-diphenyl-1:2:4-triazole, A., 238.
- p*-Ethylthiolphenylcarbamide, A., 346.
- p*-Ethylthiolphenylthiocarbamide, A., 346.
- 3-Ethylthiol-5-phenyl-4-tolyl-1:2:4-triazoles, A., 239.
- 3-Ethylthiol-5-phenyl-1:2:4-triazole, A., 238.
- 2-Ethylthionaphthen-3-carboxylic acid, A., 1164.
- 3-Ethylthymine. See 2:6-Diketo-5-methyl-3-ethylpyrimidine.
- 2-Ethyl-*p*-toluic acid, 5-hydroxy-, hydroxy-*di*- and -*tetra*-chloro-, and α -5-di-hydroxy- $\beta\beta\beta$ -trichloro-, and their derivatives, A., 1053.
- 4-Ethyl-1:3:5-triazine, 2-amino-6-thiol-, and its salts, A., 368.
- Ethyltri-*n*-butylarsonium iodide, A., 473.
- α -Ethyl-*n*-valeric acid, α -hydroxy-, amide of, A., 472.
- β -Ethyl-*n*-valeronitrile, β -hydroxy-, A., 472.
- Ethylvinylcarbinol, resolution of, and its hydrogen phthalate and its salts, A., 1393.
- 9-Ethylisoxanthine-8-thiolacetic acid, A., 743.
- 3-Ethylxantho-4-methoxybenzoic acid, A., 839.
- Ethylxantho-5-nitroanisole, and its mercapto-derivative, A., 839.
- "Etrates," B., 697.
- Eucalyptus dives*, oil of, B., 514.
- Eucalyptus rariflora*, essential oil of, B., 781.
- Eucalyptus* oils, B., 781.
- Eucalyptus* trees, soils for, in La Plata forest, B., 409.
- Eucodal, detection and determination of, B., 945.
- Eucolite, formula of, A., 707.
- Euclite, A., 930.
- Eudesmol, identity of, with machilol, and its relationship with selinene, A., 1302.
- Eudialyte, A., 289, 594.
- iso*Eugenol, preparation of, from clove oil, A., 479.
- Eugenols, heats of neutralisation of, A., 1128.
- β -chloroallyl ethers, A., 952.
- 3:5-dinitrobenzoyl derivatives, A., 837.
- iso*Eugenols, stereoisomeric, and their derivatives, A., 348.
- Eulytine, crystal structure of, A., 1359.
- Eulytite, crystal structure of, A., 550, 1218.
- Euonymus europæus* (spindle-tree), carotenoid of, A., 885.
- Eupatorium urticæfolium* (white snakeroot), hypoglycemic properties of, A., 871.
- β -Euphorbane, A., 847.
- Euphorbia formosana*, constituents of, A., 1101.
- Euphorbia lathyris*, surface tension of latex of, A., 272.
- Euphorbium resin. See under Resins.
- Euphorbodienes, A., 847.
- Euphorbols, and their derivatives, A., 625, 847.
- Euphorbone, derivatives of, A., 625.
- Europium, spectra of, A., 780.
- furnace spectrum of, A., 7.
- Eurytemora hirundoides*, resistance of, to oxygen depletion, A., 639.
- Eutectic point in *n*-component systems, lowering of, A., 568.
- Euxanthic acid, constitution of, A., 1040.
- Evaporation, system for, (P.), B., 702.
- laboratory, of large quantities, A., 330.
- multi-stage, of liquids, (P.), B., 1079.
- vacuum, A., 191, 330.
- Evaporation apparatus, (P.), B., 424, 911, 1126.
- heated-roller, (P.), B., 140.
- vacuum, A., 592; (P.), B., 703.
- Evaporators, (P.), B., 424, 571, 616, 911, 954, 1030.
- breaking of foam in, (P.), B., 702.
- spray separator for, (P.), B., 371.
- film, for liquids, (P.), B., 1030.
- inclined-tube, heat transmission in, B., 181.
- laboratory, A., 815.
- Everitt's salt, A., 320.
- Exclusion principle, Pauli's, A., 1345.
- Exzacaria agallocha*, production of power alcohol from, B., 1024.
- Explosions, A., 916.
- waves of, A., 1014.
- in closed cylinders, A., 689, 1241.
- debased, and their induction periods, A., 436.
- gaseous, kinetics of, A., 1130.
- ionisation in, A., 688.
- in closed containers, A., 1371.
- "after-burning" in, A., 1240.
- of mixed gases in bombs, A., 1131.
- Explosives, (P.), B., 418, 783, 1075.
- manufacture of, (P.), B., 566, 783, 1156.
- recovery of solvents by Bayer process in, B., 743.
- crusher gauge for, B., 418.
- purification of, (P.), B., 180.
- coefficients of thermal expansion of, B., 319.
- transmission of detonation of, A., 689.
- determination of velocity of detonation of, B., 783.
- photographic records of waves and vortices produced by discharge of, A., 317.
- high brisance of, B., 136, 225, 368.
- residual carbon from, B., 655.
- absorbent materials for, (P.), B., 699.
- priming compositions for, (P.), B., 995.
- determination of chemical stability of, by p_H determination, B., 907.
- ammonium nitrate, determination of potassium perchlorate in, B., 136.
- blasting, manufacture of, (P.), B., 947, 1156.
- containing calcium nitrate, manufacture of, (P.), B., 1123.
- chlorate, detonating ability and explosive power of, B., 907.
- nitrocellulose, propellant, (P.), B., 995.
- organic, from oxidation of hexamethylenetetramine, (P.), B., 319.
- liquid oxygen, absorbents for, (P.), B., 699.
- "penthrinite," B., 136.
- percussive, (P.), B., 1075.

- Explosives**, powder, variation of *sp.d.t* with charging density of, B., 515.
 nitrocellulose and nitroglycerin, comparison of, B., 418.
 propellant, (P.), B., 1075.
 non-solvent, production of, (P.), B., 655.
 black powder, B., 224; (P.), B., 368.
 determination of sulphur in, B., 864.
 colloidal powder, deflagration temperature of, B., 864.
 instability of, B., 224.
 containing vaseline, combustion of, B., 515.
 smokeless powder, B., 907, 1123; (P.), B., 699, 864, 947.
 burning temperatures of, B., 655.
 manufacture of propellants for, (P.), B., 464.
 SD powder, ignition during pressing of, B., 418.
 determination of moisture in, B., 994.
 propellant, manufacture of, (P.), B., 699.
 determination of aromatic amino-compounds used for stabilisation of, B., 655.
 solid, detonation of, B., 224, 566.
Extinction coefficient of solutions, variation of, with temperature, A., 423.
Extraction, theory of, A., 1144.
Extraction apparatus, A., 458, 592, 704, 705, 1027; (P.), B., 1078.
 for biological products, A., 1202.
 for fats, etc., B., 909.
 for liquids, A., 538.
 from finely-divided material, (P.), B., 423.
 centrifugal, (P.), B., 615.
 laboratory, (P.), B., 615.
 continuous, A., 190.
 with combined filter, (P.), B., 1078.
 Soxhlet, A., 1027, 1389.
Extraction dialyser, A., 929.
Extraction residues, apparatus for determination of, A., 58.
Extractum belladonnæ, determination of alkaloid in, B., 222.
Exudates, articular, proteins in, A., 759.
Eyes, mineral content of, A., 1177.
 effect of phloridzin on sugar content of aqueous humour of, A., 119.
 manufacture of extracts of lens of, (P.), B., 782.
 specificity of protein in lens of, A., 508.
 pigeon's, glycogen in lenses of, A., 251.
 "Ezoyanagi," digestion of wood of, B., 1004.

F.

- Fabrics**, wet treatment and cleaning of, (P.), B., 801.
 vats for wet-treatment of lengths of, (P.), B., 838.
 washing of, B., 715.
 rotary machines for, (P.), B., 716.
 stained with river water, B., 922.
 cause of laundry "winter damage" to, B., 835.
 drying and stretching of, prior to stentering, (P.), B., 1137.
 bleaching of. See under Bleaching.
 thickness of, B., 152.
 permeability of, to air, B., 581.
 portable apparatus for measurement of, B., 387.
 penetration of, in relation to their porosity, B., 798.
 thermal insulating properties of, B., 835.
 theories of lustre in, B., 715.
 deterioration of, on exposure after impregnation with fishing-net preservatives, B., 755.
 wear testing of, B., 582.
 removal of oil stains from, (P.), B., 1137.
 treatment of, with cellulose, (P.), B., 244.
 coating or impregnating composition for, (P.), B., 213.
 impregnation of, with rubber, B., 643.
 production of effects on, (P.), B., 244.
 manufacture of, containing effect threads, (P.), B., 346.
 cellulose, loading and weighting of, (P.), B., 391.
 water-resistant, production of, (P.), B., 486.
 cellulose acetate, moiré treatment of, (P.), B., 801.
 ornamental, production of, (P.), B., 486.
 coated, resistant to fungi, production of, (P.), B., 838.
 and impregnated, (P.), B., 585, 1046.
 cotton. See Cotton fabrics.
 crêpe, manufacture of, (P.), B., 836, 1008, 1090.
 crêpe-effect, manufacture of, (P.), B., 673, 1090.

- Fabrics**, dyed or printed, steaming of, (P.), B., 198.
 felted, (P.), B., 534.
 fireproof, manufacture of, (P.), B., 1046.
 flexible, impermeable, (P.), B., 585.
 hard, manufacture of, (P.), B., 627.
 linen. See Linen fabrics.
 nitrated, as backing for lace, etc., manufacture of, (P.), B., 244.
 ornamental, production of, (P.), B., 391.
 pile, treatment of, (P.), B., 154*.
 plaited, production of, (P.), B., 969.
 rubber-coated, (P.), B., 674.
 silk. See Silk fabrics.
 spangled, manufacture of, (P.), B., 584.
 textile, measurement of colour of, B., 584, 670.
 treatment of, with liquors, (P.), B., 293.
 finishing of, (P.), B., 293.
 prevention of shrinkage of, (P.), B., 585.
 decorative treatment of, (P.), B., 674.
 machines for production of moiré effects on, (P.), B., 585.
 application of pictures in fast colours to, (P.), B., 198.
 production of materials resembling, from cellulose derivatives, (P.), B., 1005.
 rubber-coated, coating of, (P.), B., 1047.
 waterproof, manufacture of, (P.), B., 59.
 woollen. See Woollen fabrics.
 detection of active chlorine or active oxygen in, B., 291.
 determination of copper, manganese and iron in, B., 196.
 determination of moisture content of, with cobalt chloride test papers, B., 713, 1004.
Facies. See Rubber substitutes.
Factories, construction of, to prevent mists of water vapour in, (P.), B., 658.
Fæces, influence of bulk in diet on calcium and phosphorus in, A., 758.
 mercury in, A., 1088.
 sexual hormone in, A., 878.
 changes of sulphates in, in relation to their purgative action, A., 1188.
 determination of lead in, A., 518.
 determination of porphyrins in, A., 863.
 determination of sulphide-sulphur in, A., 252.
Farnesyl bromide, A., 333.
Fasting, effect of, on creatine and nitrogen in white rats, A., 868.
Fat or Fats, formation of, from carbohydrates, A., 1266, 1334.
 under influence of insulin, A., 880.
 solvent extraction of, (P.), B., 71, 1146.
 extraction apparatus for, B., 909.
 purification of, (P.), B., 355.
 washing of, (P.), B., 169.
 deacidification of, with alcohol, B., 641.
 apparatus for experimental deodorisation of, B., 641.
 optical activity of, B., 849.
 action of silent electric discharge on, B., 32.
 expansion of, on melting, B., 399.
 hardening of, catalytically, B., 499.
 influence of isooleic acid on, B., 683.
 dry-rendering of, (P.), B., 894.
 bleaching of. See under Bleaching.
 solubility of, in various solvents, B., 500, 550, 894.
 Crismer index and critical temperature of solubility of, in alcohol, B., 1060.
 promoters for catalytic hydrogenation of, B., 306.
 hydrolysis of, in alkaline alcoholic solution and determination of unsaponifiable matter, B., 767.
 retardation of, by lecithin, B., 595.
 oxidation of, by air in presence of yellow phosphorus, A., 691.
 effect of light on, B., 726.
 rate of formation of oxidation decomposition products in, B., 641.
 autoxidation of, and their destruction of vitamin-E, A., 773.
 and antioxidants, B., 550.
 reduction of, under high pressure to alcohols and hydrocarbons, A., 932.
 sulphonation of, (P.), B., 684.
 splitting of, B., 595.
 Twitchell splitting reagents for, B., 399.
 apparatus for recovery of, (P.), B., 212*.
 from emulsions, (P.), B., 169*.
 preservation of, (P.), B., 935.

- Fat or Fats**, rancidity of, B., 1017.
 accelerated by porous packing, B., 1121.
 measurement of, B., 398, 550.
 Kreis test for, B., 1105.
 oleic acid rancidity of, B., 124.
 rancidity changes and flavour of, B., 1072.
 susceptibility of, to oxidative rancidity, B., 893.
 apparatus for separation of, from gases, (P.), B., 169*.
 preparation of edible emulsions of solids in, (P.), B., 1154.
 transfer of, A., 867.
 in cells, A., 389.
 effect of diet on, in tissues, A., 648.
 effect of vitamin deficiency on digestibility of, A., 515.
 conversion of, into carbohydrates in the organism, A., 513, 866.
 action of cholesteryl esters and, on metabolism, A., 867.
 blood-phosphorus in absorption of, A., 1450.
 resorption of, in presence of bile acids, A., 513.
 by desaturation of fatty acids, A., 648.
 influence of pancreas on, A., 1450.
 animal, rendering of, (P.), B., 71.
 cooking, used, regeneration of, (P.), B., 642.
 edible, saponification values of, B., 399.
 Kreis test for rancidity of, B., 816.
 determination of butyric and hexoic acids in, B., 1017.
 extraneous, detection of, in milk and butter, B., 133.
 human, composition of, A., 1442.
 liquid, determination of iodine value of, in presence of ether and water, B., 1017.
 mineral, refining of, (P.), B., 474.
 mixed, determination of Reichert-Meissl value of, B., 399.
 natural, and their fatty acids, spectra of, in relation to vitamin-A, A., 529.
 neutral, production of, (P.), B., 212*.
 solid, determination of density of, B., 399.
 total, rapid determination of, B., 500.
 vegetable, detection of animal fats in, B., 306.
 staining of, for microscopy, A., 134.
 examination of, B., 209.
 differentiation of types of, by means of dyes, A., 1442.
 "periodine" values of, B., 258.
 testing of, with micropenetrator, B., 258.
 colour reactions of, B., 402.
 analysis of, B., 1105.
 iodometric acidimetry of, B., 1017.
 interferometric analysis of, B., 1059.
 micro-analysis of, B., 1017.
 determination of, volumetrically, A., 642.
 in chocolate, B., 43.
 in ice cream, B., 1071.
 in marzipan and persipan products, B., 859.
 in sterilised milk, B., 1025.
 in oil seeds and cottonseed cakes, B., 258.
 in soap, B., 727.
 determination of lecithin in, B., 641.
 determination of unsaponifiable matter in, B., 641.
 determination of water in, B., 124.
- Fatigue**, biochemistry of, A., 1084.
- Fatty substances**, separation of, from solutions, (P.), B., 596.
 fractional saponification of, B., 849.
- Fausserite**, A., 1029.
- Favus**, A., 253.
- Feeders**, disc, (P.), B., 570.
- Feeding-stuffs**, production of, from cottonseed, B., 944.
 desiccation of, (P.), B., 88.
 mineral constituents of, A., 1326.
 from distillery dregs, B., 943.
 beet slices for, B., 605.
 use of sugar-beet tops as, B., 1072.
 soya beans as, B., 1070.
 soya bean cake as, B., 1119.
 conservation of, B., 1153; (P.), B., 88.
 calculation of proteins in, from nitrogen content, B., 1119.
 green, preservation of, B., 558.
 nitrogenous, production of, from vegetable material, (P.), B., 509.
 vegetable, determination of sand in, B., 564.
 vitamin, production of, (P.), B., 88.
 analysis of, B., 219.
 determination of calcium, magnesium and phosphorus in, B., 652.
- Feeding-stuffs**, determination of crude fibre in, B., 1072.
 determination of phosphoric acid in, B., 87.
 determination of sand in, B., 1121.
- Fehling's solution**, A., 1148.
 colloid chemistry of, A., 907.
- Felspar**, removal of iron impurities from, B., 759.
 weathering of, A., 595.
 effect of, in pottery bodies, B., 349.
 clouded, A., 1029.
 twinned plagioclase, from Rajputana, A., 1265.
 unit analysis of, B., 64.
- Felt**, mordanting hair for production of, (P.), B., 534.
 treatment of, (P.), B., 1135.
 roofing, determination of wool in, B., 396.
- Fenchone**, rearrangement of acetylenecarbinol from, to aldehyde, A., 1068.
 2:4-dinitrophenylhydrazon, A., 937.
*iso*Fenchylamine, and its derivatives, A., 736.
 Fenchylideneacetaldehyde, and its derivatives, A., 1068.
- Fennel**, essential oil of, B., 611.
- Fergusite** from Turkestan, A., 1265.
- Ferments**. See **Enzymes**.
- Fermentation**, B., 86.
 process and apparatus for, (P.), B., 738.
 control of, (P.), B., 1024.
 effects of electric currents on, B., 1117.
 influence of adsorbents on, B., 562.
 aëration of liquids in, (P.), B., 314.
 ozonisation of liquids after, (P.), B., 315.
 harmful effect of malt dust in, B., 39.
 in heterogeneous and discontinuous media, A., 527.
 in flasks and vats, B., 177.
 in open and closed vessels, B., 903.
 in food industries, B., 86.
 of hexoses by micro-organisms, energy available for, A., 875.
 of molasses, (P.), B., 40.
 by yeast. See under **Yeast**.
- acetic**, A., 656.
 aldehyde dismutation in, A., 394.
 acetone-butyl alcohol, oxidation and reduction in, A., 877.
 inhibition of, by acids, A., 1458.
 alcoholic, theory of, A., 72, 1039.
 nomenclature of catalysts for, A., 1333.
 co-enzymes of, A., 1457.
 inhibition of, by bromoacetic acid, A., 875.
 by metallic sulphates, A., 875.
 action of halogen compounds on, A., 1333.
 action of marine algae on, A., 1091.
 action of sea water on, A., 1091.
 effect of ultra-violet irradiated sea water on, A., 1333.
 of mixed sugars, A., 522.
- amylolytic**, A., 873.
 bottom, removal of head during, B., 562.
 butyric, in silage, B., 608.
 minor industrial, B., 86.
 lactic, A., 765.
 production of phosphoric esters during, A., 266.
 effect of reducing substances in milk on, A., 1334.
- lactic-acetic**, reaction of the medium in, B., 562.
 free acidity and pH of, A., 1334.
- oxidative**, A., 1188.
 dependence of, on oxidation-reduction potential, A., 769.
 protolytic, effect of fission products on, A., 766.
 selective, A., 263.
- Ferric salts**. See under **Iron**.
- Ferriocyanides**, production of, from hydrocyanic acid, B., 586.
 See also under **Hydroferriocyanic acid**, salts.
- Ferrioxalic acid**, potassium salt, desensitisation in, A., 1378.
 potassium and sodium salts, hydrates of, A., 432.
- Ferrites**, A., 324.
 crystal structure and magnetic properties of, A., 671.
 sub-crystalline structure of, B., 635.
 formation of, from austenite, B., 635.
 formation and decomposition of, A., 911.
- Ferrochromium**, manufacture of, (P.), B., 980.
 determination of aluminium in, B., 298.
- Ferrocyanides**, structure of, A., 1422.
 effect of light on equilibrium of iodine and, A., 308.
 photochemical colour reaction of, with cyanamide, A., 806.
 detection of, in presence of thiocyanates, A., 326.

- Ferrocyanides.** See also under Hydroferrocyanic acid, salts.
- Ferromagnetics,** intrinsic magnetisation of, A., 1357.
- Ferromagnetic alloys.** See under Alloys.
- crystals. See under Crystals.
- materials, Hall effect and magnetic properties of, A., 29.
- in weak alternating fields, A., 28.
- metals. See under Metals.
- substances, demagnetising field of, A., 1114.
- magnetons in, A., 1000.
- Ferromagnetism,** A., 551, 791.
- theory of, A., 553.
- atomic order in, A., 28.
- and electrical properties, A., 1357.
- relation between conductivity and, A., 673, 1003.
- and conductivity electrons, A., 1108.
- Ferromolybdenum,** production of, (P.), B., 811.
- Ferropentacyanides,** nitroso- and oximino-, derived from nitroprusside, A., 609.
- Ferrophosphorus,** manufacture of, (P.), B., 540, 1144.
- removal of silicon from, (P.), B., 1015.
- Ferrosilicon,** analysis of, B., 298.
- determination of manganese in, volumetrically, A., 1142.
- determination of silicon in, B., 591, 976.
- Ferrotitanium,** production of, (P.), B., 353.
- Ferrotungsten,** production of, (P.), B., 811.
- Ferrous salts.** See under Iron.
- Ferrovanadium,** determination of vanadium in, iodometrically, B., 443.
- Ferrum reductum,** testing of, and distinction from ferrum pulveratum, B., 780.
- Fertilisers,** (P.), B., 176, 735.
- production of, (P.), B., 83, 270, 509, 542, 735, 776, 858, 899, 941, 990, 1113, 1114.
- power economy in plant for, B., 613.
- from ammonium thiocyanate, (P.), B., 990.
- from distillery and beet-sugar waste liquors, (P.), B., 735.
- from gas liquors, (P.), B., 959.
- from phosphate rock, (P.), B., 735.
- stable to storage and capable of being scattered, (P.), B., 410.
- prevention of caking of, (P.), B., 719.
- granulation of, (P.), B., 559, 735.
- drillability of, B., 311.
- action of, B., 1066.
- effect of, on soil reaction, B., 174.
- residual effect of, B., 457.
- free-ammonia injury of seedlings by, B., 215.
- ammonium-calcium balance in, B., 360.
- availability of nitrogen in, B., 507.
- evaluation of available phosphoric acid in, B., 311.
- examination of soils for use of, B., 690.
- trials of, B., 311.
- field experiments with, B., 506.
- effect of farmyard manuring on efficiency of, B., 458.
- distribution of, in soils by cultivation, B., 455.
- containing calcium nitrate or ammonium nitrate and oils, explosive properties of, B., 898.
- use of industrial wastes as, B., 987.
- use of leucite as, B., 1067.
- molasses as, B., 1149.
- treatment of insoluble phosphates for use as, (P.), B., 941.
- phosphorites as, B., 215.
- Polish phosphorites as, B., 174.
- with pest-destroying action, (P.), B., 1068.
- ammonium phosphate, manufacture of, (P.), B., 216*.
- ammonium potassium phosphate, manufacture of, (P.), B., 858.
- ammonium sulphate and phosphate, manufacture of, (P.), B., 201.
- calcium, production of, (P.), B., 216.
- complete, response of plants to, B., 507.
- compound, manufacture of, (P.), B., 176.
- concentrated and mixed, manufacture of, (P.), B., 176.
- granular, treatment of, (P.), B., 821.
- kainite and 40% potash salts, "effect value" of, B., 81.
- mixed, manufacture of, (P.), B., 314, 692, 735, 882, 1049, 1114.
- treatment of, (P.), B., 858.
- ammonium nitrate and sulphate, production of, (P.), B., 776.
- new, "Nolitt," B., 455.
- nitrogen, apparatus for manufacture of, (P.), B., 821.
- prepared by Muhlert process, B., 559.
- comparison of, B., 604.
- effect of, on nitrification, B., 559.
- Fertilisers, nitrogen, action of, on acid soils,** B., 38.
- value of, in northern Ukrainian chernozem, B., 507.
- effect of manuring with, on crops, B., 605.
- application of, to oats, B., 507.
- and phosphate, manufacture of, (P.), B., 648.
- "nitrophoska," B., 215.
- nitro-phospho-potassium, manufacture of, (P.), B., 648.
- non-caking, production of, (P.), B., 735, 776.
- organic, deodoriser for acceleration of ripening of, (P.), B., 941.
- phosphate, production of, (P.), B., 201, 216*, 458, 776, 990, 1114, 1150.
- fields tests on, B., 266.
- pot experiments with, B., 507.
- availability of, B., 81, 174.
- effect of, on soils, B., 82.
- Rhenania phosphate, evaluation of, B., 456.
- potash, from manufacture of alcohol, B., 271.
- unstable, preservation of, by coating, (P.), B., 899.
- urea, B., 604.
- containing urea-calcium nitrate, (P.), B., 132.
- Fertility, diet requirements for,** A., 772.
- Ferula galbaniflua,** essential oil from fruit of, B., 274.
- Fever, lipin metabolism in,** A., 648.
- experimental, A., 116.
- Fibres, preparation of, from wood,** (P.), B., 1136.
- manufacture of, by a cyclic process, (P.), B., 627.
- cottonisation and cleaning of, with sodium silicate, B., 1046.
- retting of, (P.), B., 920.
- determination of thickness of, B., 625.
- oiling and dressing of, for spinning, (P.), B., 534.
- ageing of, B., 950.
- disintegration and deposition of, for filtering media, etc., (P.), B., 876.
- manufacture of articles from, (P.), B., 1136.
- animal, weighting of, (P.), B., 880.
- treatment of, with ozone, (P.), B., 585.
- protection of, against fungi, etc., (P.), B., 801.
- susceptibility of, to damage by clothes moth, B., 624.
- difficultly tractable, manufacture of materials from, (P.), B., 920.
- kemp and outer-coat, relation between oystine yield and total sulphur in, A., 508.
- artificial, manufacture of, (P.), B., 242, 533, 672, 714.
- by the wet-spinning process, (P.), B., 1044.
- treatment of, (P.), B., 582, 799.
- dry-spinning of, (P.), B., 754.
- production of endless bundles of, (P.), B., 343.
- crimped, manufacture of, (P.), B., 674.
- artificial silk, hollow, B., 835.
- collagen. See Collagen fibres.
- crude, preparation of, A., 1198.
- treatment of, by "Dutch" process, B., 59.
- determination of, with "Cella" filters, B., 15.
- diazotisable, manufacture of, (P.), B., 672, 716.
- "kenaf," effect of watering of plants on, B., 477.
- mineral, artificial, manufacture of, (P.), B., 882.
- non-coniferous, treatment of, (P.), B., 533.
- organic, determination of, in asbestos products, B., 478.
- papermaking, ageing-tests of, B., 581.
- ramic. See Ramic fibres.
- spinnable, production of, from flax and straws, (P.), B., 1005.
- staple, artificial, treatment of, (P.), B., 1089.
- opening and preparation of, for spinning, (P.), B., 836.
- textile, structure of, B., 670.
- mounting of sections of, B., 670.
- manufacture of, from vegetable matter, (P.), B., 879.
- extraction of, from fibrous materials, (P.), B., 1135.
- reduction of electric charge of, (P.), B., 626.
- measurement of flow and relaxation of, B., 624.
- lustre of, B., 59.
- degumming of, (P.), B., 967.
- sizing of, (P.), B., 535.
- preparation of, for spinning, (P.), B., 154.
- treatment of, with lecithin, B., 879.
- mixed, determination of, B., 875.
- vegetable, determination of structure of, by dissolving in sulphuric acid, B., 477.
- treatment of, (P.), B., 920, 967.
- for use as filtering medium, (P.), B., 837.
- emulsions for sizing of, (P.), B., 628.

- Fibres, vegetable, purified, (P.), B., 15.**
 vulcanised, manufacture of, (P.), B., 482.
- Fibre board, manufacture of, (P.), B., 534, 673.**
- Fibrin, formation of, in articular exudates, A., 1083.**
 swelling and isoelectric point of, A., 909.
 staining of, A., 1460.
 action of proteinase on, A., 521.
- Fibrinogen, specific viscosity of, A., 640.**
 effect of acid denaturation on combining power of, A., 1440.
- Fibroin sols, viscosity of, A., 1231.**
- Fibrous articles, manufacture of, (P.), B., 838.**
- Fibrous compositions, production of, (P.), B., 110.**
- Fibrous materials, production of, (P.), B., 344.**
 drying of, (P.), B., 344.
 treatment of, (P.), B., 967.
 digestion of, (P.), B., 341, 627, 1136.
 digestors for, (P.), B., 582.
 alkali-boiling of, (P.), B., 243, 244*.
 cooking of, (P.), B., 1090.
 pulping of, (P.), B., 241.
 apparatus for rubbing, etc. of, (P.), B., 879.
 recovery of, from sugar cane, (P.), B., 627.
 coating of, with pitch, etc., (P.), B., 922.
 with rubber, (P.), B., 770.
 coated with synthetic resins, drying of, (P.), B., 920.
 solution for fireproofing of, (P.), B., 155.
 fireproof binding for, (P.), B., 969.
 waterproofing of, (P.), B., 585.
 emulsions for, (P.), B., 628.
 manufacture of slabs from, (P.), B., 1090.
 compressed, (P.), B., 15.
 binding material for manufacture of, (P.), B., 405.
 felted, manufacture of, (P.), B., 671.
 laminated, (P.), B., 482.
 rubber-impregnated, manufacture of, (P.), B., 876.
 sheet, manufacture of, (P.), B., 673.
 vegetable, sizing, etc., of, (P.), B., 1137.
 wax-impregnated, (P.), B., 583.
- Ficus radicans*, occurrence of coumarin in, A., 884.**
- Figs, preservation of, by freezing, B., 272.**
- Filaments, manufacture of, (P.), B., 110.**
 activation of, (P.), B., 848.
 artificial, production of, (P.), B., 59, 481, 482, 582, 672, 715, 754, 799, 836, 877, 1044.
 apparatus for, (P.), B., 154, 799, 1045.
 from aqueous cellulose solutions, (P.), B., 1044.
 by dry-spinning, (P.), B., 921.
 manufacture and working up of, (P.), B., 626.
 manufacture and employment of, (P.), B., 715.
 production of lengths of, to be cut up into staple fibres, (P.), B., 1090.
 hollow, production of, from cellulose derivatives, (P.), B., 878.
 lustrous, manufacture of, from cellulose derivatives, (P.), B., 1044.
 oxide-coated, electrolytic phenomena in, B., 934.
- Filix mas*, biological evaluation of preparations of, B., 318.**
- Fillers, permeability of films of, B., 72.**
- Films, structure of, A., 548.**
 formation of, at liquid-liquid interfaces, A., 1229.
 manufacture of, (P.), B., 16, 128.
 apparatus for, (P.), B., 437.
 prevention of formation of, (P.), B., 465*.
 as a state of matter, A., 422.
 colouring of, (P.), B., 180.
 from vapour condensation, structure of, A., 1207.
 hardness of, B., 851.
 for use as sound or talking films, (P.), B., 969.
 artificial, manufacture of, (P.), B., 533.
 composite, (P.), B., 406.
 duplex, waterproof, manufacture of, (P.), B., 1045.
 surface, A., 1121.
 adhesive forces on, A., 299.
 unimolecular, elliptical polarisation and, A., 299.
- thin, physical properties of, A., 1229.**
 photo-electric formation of, A., 894.
 structure of, from solutions of crystallisable and non-crystallisable substances, A., 163.
 of organic compounds, formation and structure of, A., 672.
 iridescent, ultramicroscopy of, A., 679.
- Films, translucent, manufacture of, (P.), B., 877.**
 unimolecular, A., 1366.
 of long-chain fatty acids, surface potentials of, A., 299.
 on water and mercury, A., 299.
- Filters, (P.), B., 95, 520, 615, 658, 703, 787, 867, 1030.**
 porous medium for, (P.), B., 953.
 vacuum casing of, (P.), B., 322.
 for air, (P.), B., 49, 911.
 cleaning of, (P.), B., 789.
 for dust in air, B., 181.
 for gases, (P.), B., 322, 911, 954, 1126.
 automatic control valves for, (P.), B., 912.
 for gases and liquids, (P.), B., 746.
 for liquids, (P.), B., 953.
 for oils, reservoir casings for, (P.), B., 1002.
 for thickening, (P.), B., 520.
 bag, (P.), B., 789.
 carbon monoxide, absorption of gases by catalyst in, B., 368.
 "Cella," use of, for determination of crude fibre, B., 15.
 drum, continuous, (P.), B., 746.
 submerged, (P.), B., 1030.
 leaf, (P.), B., 94, 659.
 light. See Light filters.
 mechanical, (P.), B., 520.
 pressure, (P.), B., 49.
 discharge of cakes from, (P.), B., 787.
 rotary, (P.), B., 182.
 drum, (P.), B., 1126.
 rotating-leaf, (P.), B., 1030.
 sand, removal of acid sludge from, (P.), B., 193.
 tubular, for gases, (P.), B., 911.
- Filter beds, (P.), B., 570.**
- Filter cakes, manufacture of, (P.), B., 867.**
 drying apparatus for, (P.), B., 465*.
 from continuous filters, treatment of, (P.), B., 570.
- Filter cloths, weaving of, (P.), B., 627.**
 from nitrocellulose, B., 106.
 sugar-factory, action of sulphides on, B., 648.
- Filter fabrics, manufacture of, (P.), B., 627.**
- Filter flasks, with interchangeable side-tubes, A., 329.**
- Filter leaves, (P.), B., 826.**
- Filter papers. See under Paper.**
- Filter presses, (P.), B., 94, 183*, 570, 615, 867.**
- Filter sieves, production of, (P.), B., 183*.**
- Filtration, B., 787, 909.**
 mathematical theory of, B., 48.
 aid to, (P.), B., 280.
 revivification of clays for, (P.), B., 193.
 porous alundum discs for, A., 593.
 sintered pyrex glass discs for, A., 593.
 centrifugal tube for, and its uses, A., 705.
 elements for, for testing milk, (P.), B., 280.
 of liquids, (P.), B., 371, 703.
 of sludge, (P.), B., 280.
 of viscous material, (P.), B., 182.
 electro-. See Electro-filtration.
- Filtration apparatus, A., 1027, 1145; (P.), B., 49, 95, 141, 142*, 424, 520, 570, 615, 867, 911, 953.**
- Finbock. See *Balanoptera physalus*.**
- "Finger-and-toe," effect of manuring on, B., 605.**
 in *Brassica*, B., 268.
- Fir trees, extraction of bark of, B., 213.**
- Firebars, copper, B., 252.**
- Fireclay, plastic, weathering of, B., 589.**
 Scottish, experimental firing of, B., 805.
- Firedamp, effect of, on inflammability of coal dust, (P.), B., 426.**
 ignition of, by heat of impact of hand picks against rocks, B., 186.
 by coal-mining explosives, B., 947.
- Fire-extinguishers, materials for, (P.), B., 910.**
 charge for, (P.), B., 522.
 production of foam for, (P.), B., 827, 1080.
 preparation of solutions for, (P.), B., 476.
 chemical, (P.), B., 465.
 dry, (P.), B., 112.
- Firelighters, manufacture of, (P.), B., 189.**
- Fireproof tiles. See under Tiles.**
- Fireproofing, composition for, (P.), B., 969, 1052.**
 solutions for, (P.), B., 155.
- Fire-resistant compositions, (P.), B., 452.**

- Fireworks**, (P.), B., 612.
detonating composition for, (P.), B., 368.
- Fisetinidin chloride**, A., 1304, 1425.
- Fisetinin salts**, A., 1425.
- Fish**, drying of, in vacuo, (P.), B., 1154.
chilling and freezing of, (P.), B., 653.
freezing of, (P.), B., 135.
apparatus for keeping and display of, (P.), B., 1121.
preservation of, B., 1072.
chemical changes in, produced by pickling processes, B., 860.
respiratory quotient of, as a function of temperature, A., 639.
elasmobranch, unsaponifiable matter from oils of, A., 62, 80.
marine, influence of insulin on glycogen distribution in, A., 771.
- Fish liver oils**, treatment of, (P.), B., 935.
chromogen of, in relation to cholesterol, ergosterol, and vitamins, A., 771.
chromogenic values of, A., 1195.
vitamin-A content of, A., 1195, 1463.
fat-soluble vitamins in, A., 989.
compounds from, (P.), B., 552.
- Fish meal**, digestibility and fodder value of, B., 695.
inadequacy of, for growth of pigs, A., 648.
adulteration of, with bone meal, B., 695.
vitamin-A and -D in, A., 659.
- Fish nets**, textile, preservation of, B., 1087.
- Fish oils**, B., 355.
vitamin content and composition of, A., 881; B., 169.
extraction of vitamin-A from, (P.), B., 212.
compounds produced in hydrogenation of, B., 125, 499, 727.
use of, in soaps, B., 816.
- Fish ponds**, manuring of, B., 312.
- Flakers**, (P.), B., 425.
- Flames**, effect of an electric field on, A., 689.
effect of anti-knock materials on speed of, B., 188.
propagation of, A., 313.
in electric fields, A., 313.
in explosive mixed gases, A., 1371.
hydrocarbon, temperatures of, A., 572.
luminous stationary, B., 468.
- Flasks**, for dropping boiling liquids, A., 331.
Dewar, A., 705.
- Flavanol acetate**, and 6-chloro-, A., 233.
- Flavanones**, trihydroxy-, and their methyl ethers, A., 1162.
polyhydroxy-, synthesis of, A., 1162.
- Flavanthrene**, synthesis of, A., 732.
- Flavone**, reduction of, by titanous chloride, A., 233.
- Flavone**, 5:7:8-trihydroxy-, and its acetyl derivatives, A., 493.
- isoFlavone**, 5:7:4'-trihydroxy-, See Genistein.
- Flavone series**, spectrography of, A., 493.
- Flax**, manuring of, B., 267.
mineral fertilisers for, B., 507.
organic fertilisers for, B., 775.
treatment of, with sodium oxalate, B., 477.
bleaching of. See under Bleaching.
cottonisation of, B., 477.
New Zealand, paper-making properties of, B., 671.
- Flax wax**. See under Wax.
- Fleece**, analysis of, B., 477.
- Flint**, age of, A., 931.
- Floors**, manufacture of coverings for, (P.), B., 503, 680.
coverings of cement and leather for, (P.), B., 807.
felt-base covering for, (P.), B., 721.
flexible masses for coverings of, (P.), B., 128, 129.
rubber coverings for, (P.), B., 590, 680, 1109.
composite materials for wearing surfaces of, (P.), B., 843.
- Florescence**, B., 719.
- Flotation**, physical chemistry of, B., 978.
effect of particle size on, B., 763.
flocculation and froth quality in, B., 978.
solubility, peptisation and wetting in, B., 1142.
differential wetting effects in, B., 1142.
influence of, on smelting, B., 1142.
of minerals, agents for, B., 252.
of ores, (P.), B., 257*.
frothing agent for, (P.), B., 256.
froth, of minerals, (P.), B., 256.
- Flour (wheat flour)**, studies in, B., 461.
production of, in France, B., 822.
viscosity of alkaline extracts of, B., 363.
bound water in suspensions of, B., 315.
- Flour**, treatment of, (P.), B., 513.
heat treatment of, (P.), B., 134, 461.
milling of, (P.), B., 134.
relation of overgrinding of, to fermentation of dough, B., 177.
bleaching of, (P.), B., 317.
and agent therefor, (P.), B., 652.
testing of colour of, B., 991, 1025.
coloration of, by hydrochloric acid, B., 219.
baking property of, (P.), B., 178.
baking tests on, B., 1118.
effect of ether extraction on bread-making properties of, B., 1118.
action of diastase on, B., 363.
ash content of cereals and, B., 315.
determination of quality of gluten in, B., 943.
peptisation of proteins of, in relation to loaf volume, B., 461.
gluten and non-gluten proteins of, B., 41.
inadequacy of, for growth of pigs, A., 648.
predetermination of soundness of, B., 608.
"rope" spore content of, B., 1025.
sterilisation of, B., 511, 608.
with carbon disulphide, B., 779.
American, Northwest and Pacific Northwest, fermentation period of, B., 694.
baking, treatment of, (P.), B., 945.
common and durum, acetone extracts of, B., 41.
low diastatic, basic baking test on, B., 1118.
New Zealand, p_H value of, B., 460.
patent, recognition of, B., 608.
potato. See Potato flour.
rye. See Rye flour.
from Saskatchewan spring-wheat, effect of bleaching on strength and colour of, B., 738.
self-rising, stability of leavening of, B., 461.
preparation of lactic acid for use in, (P.), B., 415.
from toasted wheat germ, B., 694.
stored, acidity in, B., 460.
tapioca. See Tapioca flour.
whole-wheat, composition of, B., 219.
detection of corncockle in, B., 219.
detection of persulphate, bromate and benzoyl peroxide in, B., 779.
detection of rye flour in, B., 219.
examination and detection of chemicals used in milling of, B., 738.
determination of ash in, B., 695, 1118.
determination of rye-flour in, B., 511.
determination of mixtures of rye and wheat products in, B., 608.
determination of starch in, by diastase-acid hydrolysis, B., 512.
- Flow**, stream-line, heat transfer in, B., 949.
- Flowers**, carbon dioxide storage of, B., 178.
colouring matters of, A., 493.
chemical effect of Mendelian factor for colour of, A., 1099, 1198.
extraction of odorous substances from, B., 223.
tannins in, A., 131.
- Flower seeds**, control of "damping-off" of, B., 1150.
- Flue dust**, collection and consumption of, (P.), B., 1031.
- Flue gases**. See under Gases.
- Fluidity**, formulae for slip and, A., 899.
- Fluoran derivatives**, A., 233, 627.
- Fluoran**, 5:7-dibromo- and 7-nitro-6-hydroxy-, A., 627.
dihydroxy- and dinitrodihydroxy-, A., 233.
- Fluorancarboxylic acids**, 6-hydroxy-, A., 627.
- Fluoranthene**, and its derivatives, A., 341, 1044.
- Fluoranthene**, 4-amino- and 4-bromo-, and their salts, 4-cyano-, 4-hydroxy-, and 4-nitro-, A., 1044.
- Fluoranthene-4-carboxylic acid**, and its derivatives, A., 1045.
- Fluoranthene-4-sulphonethylamide**, A., 1045.
- Fluorene**, structure of, A., 27.
optical properties of, A., 1355.
derivatives, isomerism of, A., 1413.
mercuri-chloride and -hydroxide, A., 1435.
- Fluorene**, mono- and di-amino-, and their acetyl derivatives, A., 623.
2:7-diamino-, and 7-nitro-2-amino-, acetyl derivatives, A., 501.
use of, as reagent for zinc, cadmium, and copper, and its salts, A., 1045.
- Fluorene series**, A., 622.
- Fluorene-2-arsinic acid**, and its sodium salt, A., 637.
- Fluorenearsinic acids**, and 2-amino-, acetyl derivative, A., 501.

- Fluorene-9-carboxylic acid, action of oxalyl chloride on, and 2:7-di-bromo-, A., 1414.
methyl ester, sodium enolate, A., 955.
- Fluorene-9:9-dicarboxylic acid, methyl ester, A., 955.
- Fluorene-9-glyoxylanilideanil, A., 1414.
- Fluorene-9-glyoxylic acid-anil, ethyl ester, A., 1414.
- Fluorenone, preparation of, from fluorene and from diphenic acid, A., 1058.
condensation product of, with resorcinol, and its chloroacetyl derivative, A., 627.
preparation of dyes from, A., 1409.
- Fluorenone, amino-, derivatives of, A., 1409.
- Fluorenone-2-arsinic acid, A., 501.
and 7-amino-, and its acetyl derivative, and 7-nitro-, and their derivatives, A., 637.
- Fluorenone-2-diazonium chloride, formation of azo-dyes from, A., 1409.
- Fluorenone-8-propionic acid, A., 341.
- Fluorescein, effect of atophan on distribution of, in tissues, A., 870.
- Fluorescein, *tetraiodo*-, mercury derivatives of, (P.), B., 782.
- Fluorescence, excitation of, and its photography, A., 814, 1212.
apparatus for microstudy and photography of, A., 189.
determination of colour and intensity of, A., 928.
chemistry of, A., 1111.
in the *L*-region, A., 1205.
in relation to concentration, A., 998, 999.
in relation to carcinogenesis, A., 252.
of dye solutions, A., 1353.
of indicators, A., 698.
resonance, A., 668.
- Fluorescent bodies, apparatus for viewing of, (P.), B., 4.
- Fluorine, atomic weight of, A., 1207.
preparation of, by electrolysis, A., 1248.
manufacture of, electrolytically, (P.), B., 632.
refractometry of, in organic compounds, A., 1113, 1355.
ultra-violet absorption spectrum of, A., 1203.
band spectrum of, A., 5.
dispersion of internal energy in spectrum of, A., 403.
thermochemistry of, A., 912.
heat of dissociation of, A., 294, 912.
action of, on ammonia, A., 809.
on wood charcoal, A., 52.
aromatic substitution with, A., 832.
replacement of, by ethoxyl groups, A., 1284.
oxidations with, A., 1022.
electric furnaces for work with, at 1000°, B., 891.
in bone meal and superphosphate, B., 630.
- Fluorine compounds with aluminium, manufacture of, (P.), B., 1010.
- Fluorine monoxide, properties of, A., 810.
heat of formation of, A., 42, 912.
- Hydrofluoric acid, heat of formation of, A., 912.
solubility, conductivity and b. p. elevation of compounds in, A., 1119.
determination of critical temperature of, A., 295.
solubility of, in benzene and octane, A., 297.
solubility of salts in, A., 297.
determination of, volumetrically, (P.), B., 536.
free, A., 1142.
in presence of hydrofluosilicic acid, B., 880.
- Fluorides, crystal structure of, A., 549.
solubility of, in hydrogen fluoride, A., 297.
in waters of the United States, A., 1265.
physiological effects of, on white rats, A., 261.
benzidine acetate reaction of, A., 925.
apparatus for detection of, A., 457.
determination of, A., 925.
- Fluosilicates, production of, (P.), B., 1092.
activity coefficients of, A., 1005.
solubilities of, A., 419.
hydrolysis of, A., 799.
- Fluorine organic compounds, aromatic, A., 945, 946.
- Fluorine detection and determination:—
detection of, in plants and soils, B., 506.
in toxicological analysis, A., 1188.
detection and determination of, in mineral waters, A., 55.
determination of, A., 1023, 1384.
volumetrically, A., 925.
as calcium fluoride, A., 1257.
in insecticides by Travers' method, B., 1048.
- Fluorite, cohesion of crystals of, A., 1003.
solarisation of, A., 1111.
coloration of, A., 543.
- Fluorspar, recovery of, from ores, (P.), B., 209*.
radioactive, from Ontario, A., 1146.
- Fluorspar ores, concentration of, (P.), B., 68.
- 2:7-Fluorol dimethyl ketone, and its derivatives, A., 622.
- 9:9-Fluorol dimethyl ketone, A., 1414.
- 2-Fluorol methyl ketone, and its derivatives, A., 622.
- Fluosilicates. See under Fluorine.
- Fluxes for soldering, (P.), B., 765.
for soft soldering, (P.), B., 814.
- Foam, apparatus for production of, (P.), B., 616.
composition for production of, (P.), B., 12.
stability of, A., 682.
measurement of pressure of, B., 421.
- Foaming, prevention of, A., 593.
prevention of formation of, in colloidal solutions, B., 214.
- Fodder. See Feeding-stuffs.
- Fetus, passage of chemical compounds from the mother to, A., 647.
human, enzymes of, A., 755.
- Fog, dispersal of, (P.), B., 141.
artificial, apparatus for production of, (P.), B., 572.
- Foil, apparatus for manufacture of, (P.), B., 437.
- n*- and *iso*-Fokienene, A., 360.
- Fokienia Hodginsii*, cyclic sesquiterpene alcohol from, A., 360.
- Fokienol, and its formate, A., 360.
- Folliculin, A., 878.
Abderhalden reaction after administration of, A., 124.
- Foods, fermentation in manufacture of, B., 86.
occurrence, detection and determination of butyric acid in, B., 652.
buffer values of, A., 1451.
magnesium in, A., 637.
manganese in, A., 978.
value of proteins in, for reproduction and lactation, A., 256.
calculation of proteins in, from nitrogen content, B., 1119.
vitamin-B₁ in, A., 1464.
preservation of, (P.), B., 134.
container for, when exposed for sale, (P.), B., 780.
possibility of use of cadmium coated containers for, B., 695.
preservation or sterilisation of, (P.), B., 1073.
disinfection of, (P.), B., 1154.
chilling of, (P.), B., 135.
chilling and freezing of, (P.), B., 653.
apparatus for, (P.), B., 1154.
heat transfer during freezing and thawing of, B., 178.
ovens for heating of, (P.), B., 565.
rotary ovens for toasting, etc., of, (P.), B., 1121.
injury of, by "menstrual poison," B., 861.
manufacture of colouring or flavouring of, (P.), B., 565.
capsules for flavouring of, (P.), B., 696.
seasonings containing vitamins for, (P.), B., 780.
antirachitic activation of, by irradiation with ultra-violet light, B., 43.
specific dynamic action of, A., 866.
effect of suprarenal extracts on, A., 1082.
requirement of, for growth of rats, A., 515.
canned, sterilisation of, B., 414.
vitamins in, B., 944, 992.
antiscorbutic vitamin content of, B., 415.
cereal breakfast, nutritive value of, A., 256.
conserved, corrosion of tin plate used for containers for, B., 1154.
diabetic, production of, (P.), B., 780.
Indian, proteins of, A., 537.
infant, preparation of, B., 316.
liquid, production of, (P.), B., 178.
medicinal, detection of vitamin-A in, B., 564.
peptonised, manufacture of, (P.), B., 780.
vegetable, carbohydrate content of, A., 257.
vitamin-potent, A., 772.
analysis of, B., 219.
colorimetric analysis of, B., 414.
detection of benzoic acid in, B., 272.
detection of benzoic and salicylic acids and of *p*-hydroxybenzoic esters in, B., 316.
detection of formaldehyde in, B., 620.
detection and determination of *p*-hydroxybenzoic acid and its esters in, B., 43.

- Foods, determination of dyes in, by titanium trichloride, B., 609.
determination of water in, B., 462.
determination of water-soluble mineral matter in, by dialysis, B., 1072.
- Food products, production of, by fermentation, (P.), B., 178.
manufacture of, with saline taste, (P.), B., 904.
cooking ovens for, (P.), B., 1026.
freezing of, (P.), B., 514.
smoke-flavour binder for, (P.), B., 610.
dried, manufacture of, from meat, (P.), B., 696.
iodometry of, B., 219.
detection of benzoic acid in, B., 609.
- Forests, tropical rain, assimilation in, A., 989.
- Formaldehyde, photosynthesis of, and carbohydrates, from alkali hydrogen carbonates, A., 920.
production of, from methane, (P.), B., 621, 1085.
polymerides of, A., 1398; (P.), B., 475.
Raman spectrum of, A., 893.
ultra-violet absorption spectrum of, A., 1110.
ultra-violet band spectrum of, A., 145.
magnetic susceptibility of solutions of, A., 411.
state of, in aqueous solution, A., 793.
action of bases on solutions of, A., 465.
action of, with ammonium chloride, A., 1266.
with ammonium sulphide, A., 573.
on hydrogen peroxide, A., 819.
on malonic esters, A., 603.
with potassium ferrocyanide, A., 320.
on sinomenine, A., 105.
condensation of, with carbamide and its derivatives, (P.), B., 213.
with ketones, A., 741.
with thiocarbamide and cuprous chloride, A., 1398.
non-resinous condensation products of aldehydes and ketones with, (P.), B., 917.
production of condensation products of carbamide and, (P.), B., 170, 262, 357, 687, 853.
polymerisation of condensation products of ketones and, (P.), B., 621.
condensation products of phenol and, B., 817; (P.), B., 357.
fumigation with, B., 784.
action of, on aggressive substance of blackleg filtrate, bacterin and aggressin, A., 396.
in histological fixation, A., 643.
influence of acetylcholine and, on alkaline reserve, A., 127.
Cannizzaro reaction with, A., 1398.
detection of, by Salkowski's reaction, B., 620.
in milk, B., 739.
with opium alkaloids, B., 620.
determination of, gravimetrically, A., 335.
in pharmaceutical preparations, B., 1073.
- Formamidines, manufacture of aryl derivatives of, (P.), B., 1086.
- Formazylbenzenes, *p*-bromo-, A., 1156.
- Formic acid, preparation of, by hydrolysis of cellulose oxalate, A., 1034.
potential of, A., 1237.
conductivity of mixtures of, with hydrogen peroxide, A., 434.
dissociation constant of, A., 308.
dielectric constant of, A., 895.
concentration of solutions of, (P.), B., 834.
manufacture of concentrated solutions of, (P.), B., 289.
action of, on hydrogen peroxide, A., 819.
on δ -phenyl- β -ethynylbutan- β -ol, A., 1050.
copper salts, crystal structure of hydrates of, A., 1218.
cupric salt, effect of ammonium formate on solubility of, in formic acid, A., 677.
dihydrate, X-ray structure of, A., 1002.
sodium salt, kinetics of heterogeneous formation of, A., 316.
uranyl salt, desensitisation in, A., 1250, 1378.
esters, addition of sodium ethoxide to, A., 196.
ethyl ester, magneto-optical dispersion of, A., 411.
glyceryl ester, A., 933.
pentaerythritol ester, crystal structure of, A., 551.
n-propyl ester, dispersion of, A., 895.
potentiometric titrations in, A., 312.
determination of, gas-volumetrically, B., 385.
in fruit juice, B., 415.
determination of acetic acid in, volumetrically, B., 530.
- Formic acid, chloro-, esters, action of, on alkylsulphuric acids, A., 1393.
trichloromethyl ester, action of, on phenols, A., 212.
methyl ester, reaction of, with benzoylacetone and its sodium derivative, in ether, A., 1035.
chlorothio-, 2:4:6-trichlorophenyl ester, A., 85.
Formiminoether hydrochloride, action of hydrazine on, A., 633.
Formistoma schlegli (Malayan gavia), fatty acids of oil of, B., 552.
- Formose, A., 1037.
- Formoxime, dibromo-, and its methyl ester, dichloro- and diiodo-, A., 1150.
- 2-Formoximino-1:3:3:5:7-pentamethylindoleninium perchlorate, A., 238.
- 2-Formoximino-1:3:3-trimethylindoleninium perchlorate, A., 238.
- ω -Formoxy-4-acetoxy-3:5-dimethoxyacetophenone, A., 1424.
- l*-Formoxyphenylacetic acid, ethyl ester, α -chloro-, A., 1291.
- Formyldiphenylacetanilide, A., 956.
- Formylglyoxylcarbamide, A., 632.
- Formylmethionines, A., 1279.
- α -Formylphenylacetoneitriles, condensation of, with phenols, A., 963.
- 2-Formyl-4-propylpyrrole-3:5-dicarboxylic acid, derivatives of, A., 747.
- α -Formyl-3:4:5-trimethoxyphenylacetoneitrile, A., 963.
- Foshagite, X-ray analysis of, A., 310.
- Foundries, moulding processes for, (P.), B., 354.
- Fowls, p_H of alimentary tract of, A., 641.
growth and composition of ovum of, A., 1182.
embryonic, development and phosphatase activity in mandibular skeleton of, A., 259.
- Fowl-plague, determination of size of virus of, A., 1095.
- Fractionation apparatus, A., 1263; (P.), B., 520, 571, 868.
- Frangularol, A., 274.
- Frangularoside. See Frangulin.
- Frangulin (*franguloside*), preparation and properties of, A., 131, 274.
- Fraunhofer lines, intensity of, A., 781.
- Freezing of solutions as a method of investigation, A., 676.
of dilute still solutions, A., 1008.
- Freezing point, determination of, with a thermocouple, A., 1342.
of physiological solutions, A., 990.
of aqueous solutions, determination of depression of, A., 753.
of organic compounds, A., 1008, 1361.
- Friable materials, crushing of, (P.), B., 2.
- Friction, of dry solids in vacuo, B., 1.
internal, of strong electrolytes, A., 686, 905.
of liquids, A., 899.
viscous, A., 793.
- Friction materials, for brakes, etc., (P.), B., 571.
- Friedel and Crafts' reaction, A., 1150; B., 964.
mixed catalysts in, A., 91.
- Frogs, combustion of alcohol by, A., 1184.
- Fruit, biochemistry and histochemistry of, A., 133, 537, 885; B., 43.
carotenoid content of, A., 885.
colouring matters of, A., 493.
dihydroxyphenyl derivative and enzyme in, A., 776.
quinic acid from, B., 415.
vitamin-C in, B., 740.
preservation of, B., 565; (P.), B., 1073.
by coating, (P.), B., 741.
by freezing, B., 272.
during storage, (P.), B., 741.
treatment of, to prevent decay, (P.), B., 415.
disinfection of, (P.), B., 1154.
organic solvents for removal of spray residue from, B., 508.
prevention of stalk rot in, (P.), B., 741.
relation of nitrogen in soil to keeping quality of, B., 267, 409.
effect of potash fertilisers on keeping quality of, B., 409.
use of acetaldehyde in storage of, B., 513.
carbon dioxide storage of, B., 178.
storage and transportation of, (P.), B., 134.
effect of solid carbon dioxide on transportation diseases in, B., 1120.
inversion of sucrose in preparation of preserves of, B., 134.
corrosion by preserves of, B., 513.
composition of, used for jam in Great Britain, B., 316.
dried, fumigation of, with ethylene oxide, B., 652.
effects of sulphur dioxide used as preservative for, B., 860.
fresh, preparation of, for market, (P.), B., 1026.

- Fruit**, harvested, killing of codling moth eggs on, B., 269.
 oil, heat treatment of, (P.), B., 211.
 Philippine, analysis and food value of, B., 134.
- Fruit drops**, devitrification of, B., 901.
- Fruit extracts**, natural and artificial, differentiation of, B., 220.
- Fruit jellies**, B., 220.
- Fruit juices**, concentration of, (P.), B., 861.
 spray drying of, (P.), B., 1154.
 corrosion of tin plant by, B., 809.
 jelly test for, B., 220.
 refractometric analysis of, B., 1072.
 titration curves of, A., 775.
 determination of formic acid in, B., 415.
- Fruit trees**, nutrition of, A., 273.
 effect of carbolineum products on, B., 605.
 potassium deficiency of, A., 1102.
 Jugo-Slavian, oil emulsions produced from, B., 734.
- Fucose**, mutarotation of, A., 715.
 dibenzyl- and phenyl-*p*-chlorobenzyl-hydrazones, A., 938.
- Fucoxanthin**, A., 733.
- Fuel or Fuels**, formation and combustion of, B., 704.
 manufacture of, (P.), B., 9, 958.
 to specifications, (P.), B., 439.
 apparatus for chemical investigation of, B., 828.
 preliminary treatment of, during supply to furnaces, (P.), B., 708.
 carbonisation of, (P.), B., 914.
 apparatus for, (P.), B., 430.
 low-temperature, (P.), B., 53.
 apparatus for, (P.), B., 102.
 combustion of, (P.), B., 792.
 for production of high temperatures, (P.), B., 792.
 oxidation of vapours of, in air, A., 1371.
 melting point of ash of, B., 229, 956.
 calorific power of gases from, B., 103.
 measurement of anti-knock value of, B., 328.
 sampling of, B., 956.
 testing of, B., 228.
 in slow- and high-speed Diesel engines, B., 1034.
- Fuel or Fuels**, agglomerated, prevention of swelling of, in water, (P.), B., 232.
 alcoholic, inflammation limits of, A., 572.
 bituminous, distillation of, (P.), B., 958.
 apparatus for gasification of, (P.), B., 233.
 carbonised, behaviour of, in open grates, B., 573.
 compound, (P.), B., 378.
 gaseous and liquid, production of, (P.), B., 1001.
 granular, burners for, (P.), B., 1129.
 hydrocarbon, synthesis of, (P.), B., 382.
 for internal combustion engines, (P.), B., 147, 193.
 liquid, (P.), B., 474, 1084.
 manufacture of, (P.), B., 529.
 combustion apparatus for, (P.), B., 874.
 burners for, (P.), B., 11, 917, 1085.
 filters for, (P.), B., 833.
 corrosion of metals by, B., 298.
 anti-knock value of, B., 791.
 effect of mineral lubricating oils on detonation of, B., 525.
 determination of sulphur in, B., 661.
 motor, (P.), B., 433, 750, 795, 1002.
 manufacture of, (P.), B., 664, 1131.
 refining of, B., 429.
 ultra-violet spectroscopy of flames of, B., 469.
 knock-rating of, B., 376.
 knocking properties of, and knock prevention, B., 1034.
 gum-formation in, B., 187.
 ethyl alcohol as, B., 53.
 petrol-alcohol-benzol mixtures as, B., 829.
 testing of, B., 1034.
 containing alcohol, production of, B., 232.
 anti-knock, (P.), B., 579, 750, 916.
 manufacture of, (P.), B., 11, 236, 383.
 low-compression, utilisation of, (P.), B., 193*.
 non-detonating, manufacture of, (P.), B., 1131.
 oil, production of, (P.), B., 191*.
 cracking of, (P.), B., 146, 1001.
 semi-cracking of, B., 283.
 filtration of, (P.), B., 523.
 elimination of asphaltenes and carbenes from, (P.), B., 55.
 uses of, B., 142.
 determination of water in, B., 749.
- Fuel or Fuels**, peat, drying of, (P.), B., 189.
 porous, improvement of calorific value of, (P.), B., 958.
 powdered, combustion of, A., 574; (P.), B., 289, 792.
 burners for, (P.), B., 148, 1085.
 sampling apparatus for, B., 466.
 pulverulent, removal of dust from plant using, (P.), B., 865.
 smokeless, production of, B., 1032.
 solid, production of, (P.), B., 1082.
 dehydration of, (P.), B., 148*.
 absorption and retention of hydrocarbons by, B., 748, 1080.
 calculation of calorific value of, B., 1032.
 production of light hydrocarbons from carbonisation of, (P.), B., 9.
 mechanism of combustion of, B., 466.
 distillation and gasification of, (P.), B., 189.
 gasification of, (P.), B., 330, 958, 1130.
 oxidation of, B., 659, 912, 999, 1031.
 determination of moisture in, B., 97.
 determination of volatile matter in, B., 956.
 testing of, by vacuum distillation at increasing temperatures, B., 1080.
 vegetable, B., 704.
 waste, utilisation of, B., 655.
- Fugacity**, definition and evaluation of, A., 1363.
- Fulminic acid**, A., 221.
 action of halogens on, A., 1150.
 mercury salt, A., 181.
 deflagration and detonation of, A., 1020.
 silver salt, action of, on triphenylmethyl chloride, A., 221.
- Fulvenes**, action of halogens on, A., 234, 949.
- Fumarase**, A., 983.
- Fumaria officinalis*, calcium oxalate crystals in seeds of, A., 133.
- Fumaric acid**, preparation of, A., 822.
 ultra-violet absorption and isomerism of, A., 1110.
 biochemical addition of water to, by plant cells and yeast, A., 883.
 biological oxidation of, A., 525.
 action of yeast on, A., 1332.
 salts, enzymic equilibrium of, with succinates, A., 1189.
 sodium derivative, ethyl ester, electrolysis of, A., 1273.
- H-Fumaric acid*, silver salt and *l*-menthyl ester, A., 1160.
- Fumes**, inhalation and retention of, by man, A., 1439.
- Fumigants**, (P.), B., 176, 1069, 1124.
 warming devices for, (P.), B., 784.
 density of air saturated with, B., 276.
 solutions for, (P.), B., 864.
 use of formaldehyde as, B., 784.
- Fungi**, effect of ionised air on respiration of, A., 125.
 reaction changes during growth of, A., 768.
 decomposition of plant tissues by cultures of, A., 1333.
 allantoinase in, A., 525.
 colouring matters of, A., 227, 264.
 metabolism of dextrose by, A., 1092.
 effect of iron on growth of, A., 1333.
 effect of p_{H_2} on nitrogen assimilation of, A., 1333.
 perfumes in, A., 847.
 specific polysaccharides from, A., 525.
 of soils, B., 556.
 determination of enzymes in cultures of, A., 524.
- Fungicides**, (P.), B., 110, 314, 622, 776, 821, 858, 899, 1114.
 manufacture of, (P.), B., 1069.
 for seeds, (P.), B., 176.
 dry, adherence of, to seeds, B., 606.
 mercury, manufacture of, (P.), B., 275.
 sulphur, (P.), B., 361.
 manufacture of, (P.), B., 776.
 relation of pentathionic acid and its derivatives to toxicity of, B., 1113.
 determination of sulphur in, B., 269.
- Furs**, treatment of, (P.), B., 173.
 improvement of, B., 390.
 felting of, (P.), B., 671.
 protection of, from moths, etc., (P.), B., 347.
 imitation, preparation of, B., 345.
 manufacture of, (P.), B., 291.
 rabbit, relation between cystine and sulphur content of, A., 1177.
- Furan**, and its derivatives, spectrochemistry of, A., 492.
 dielectric constants of benzene solutions of, A., 1113.

- Furan nucleus, stability of, A., 627.
 orientation in, A., 1422.
 velocity of opening of, A., 316.
 anaesthetic action of, A., 1328.
 derivatives, A., 95, 232, 1422.
 nitration of, A., 626.
 oxidation of, by peracids, A., 1422.
- Furan, 2-bromo-5-nitro-, A., 1422.
 nitro-, preparation of, A., 626, 849.
mono- and *di-*nitro-, A., 232.
- Furazan, iodo-, A., 1150.
- Furfuraldehyde, preparation of, from oak bark from tanneries, B., 986.
 preparation, properties and applications of, A., 574.
 and its derivatives, mechanism of addition and substitution in, A., 1422.
 hydrogenation of, catalytically, A., 1422.
 oxidation of, A., 1422.
 velocity of conversion of, into its acetal, A., 798.
 reaction between β -naphthylamine, pyruvic acid and, A., 237.
 phenyl-*p*-chlorobenzylhydrazone, A., 938.
 Cannizzaro reaction with, A., 1422.
 determination of, in pulps, B., 387.
- Furfuraldehyde, 5-chloro-, and its oxime, A., 1161.
 β -Furfuraldoxime, metallic complexes of, A., 1429.
- Furfuroylphenylcarbinol, and its semicarbazone, A., 354.
- Furfuryl alcohol, 5-nitro-, A., 849.
- 2-Furfuryl mercaptan, polymeric, A., 1422.
- Furfurylditetrahydroquinolymethane, A., 632.
- Furfurylidene-*p*-bromoacetophenone, A., 360.
- Furfurylidene*cyclohexylamine*, A., 343.
- Furfurylidenehippuric acid, and its esters, and their reaction with hydroxylamine, A., 232.
- Furfurylidenepyruvic acid, preparation of, and its sodium salt and phenylhydrazone, A., 1054.
- Furnaces, (P.), B., 93, 277, 569, 657, 865, 997, 1125.
 heating of, (P.), B., 189.
 apparatus for charging of, (P.), B., 704.
 charging of, for heat treatment of metals, (P.), B., 303.
 brickwork of, (P.), B., 96.
 pressure gas burners for, (P.), B., 874.
 mechanism for opening doors of, (P.), B., 426.
 fronts for, (P.), B., 323, 997.
 grates for, (P.), B., 955.
 linings for, (P.), B., 440, 492, 1029.
 roofs for, (P.), B., 426.
 suspended roofs for, (P.), B., 659.
 walls for, (P.), B., 746, 1029.
 structure of, (P.), B., 422.
 cooled walls for, (P.), B., 790.
 air- and water-cooled walls for, (P.), B., 426.
 blocks or tiles for walls of, (P.), B., 139.
 heat losses through walls of, B., 1077.
 with corrugated walls, (P.), B., 470.
 with cooling systems, (P.), B., 279.
 effect of gases from bagasse and coffee-pod fuels on walls of, B., 21.
 preliminary treatment of fuel for, (P.), B., 708.
 predrying of fuel during its delivery to, (P.), B., 795.
 burning of fuel in, (P.), B., 662.
 treatment of air-blast for, (P.), B., 119.
 treatment of dust from, (P.), B., 569.
 treatment of liquid materials from, (P.), B., 785.
 removal of residues from, (P.), B., 1029.
 for burning fuel mixtures, (P.), B., 193.
 burning liquid, gaseous or pulverised fuel, burners for, B., 193.
 for fusion of ceramics, B., 745.
 for coke production, (P.), B., 285.
 for burning enamel ware, (P.), B., 926.
 for supplying heat and drying gases, (P.), B., 825.
 for recovery of metals, (P.), B., 1057.
 for reduction of oxide ores, (P.), B., 723.
 for production of sulphates and hydrochloric acid, (P.), B., 588.
 for burning waste materials, (P.), B., 1036.
- Furnaces, annealing, (P.), B., 638, 1143.
 for metals, B., 745; (P.), B., 723, 889, 891.
 annealing or heat treatment, (P.), B., 422.
 blast, (P.), B., 447.
 operation of, (P.), B., 638, 723.
 correlation of data for, B., 635.
- Furnaces, blast, working of, B., 807.
 use of waste gases in, (P.), B., 496.
 heat transfer from gas stream to solids in, B., 181.
 retention of flue dust in, by the Eichenberg process, B., 975.
 tuyères for, (P.), B., 69.
 interaction of gases and ore in, B., 115.
 boiler, (P.), B., 142, 869.
 reactions of sulphur compounds in, B., 701.
 tubular, combustion devices for, B., 657.
 case-hardening, (P.), B., 810.
 with worm-type charging device, (P.), B., 810.
 chemical, (P.), B., 785.
 combustion and electric heated, (P.), B., 48.
 counterflow, (P.), B., 909.
 cremating, (P.), B., 523.
 crucible, tilting gear for, (P.), B., 29.
 cupola, (P.), B., 1143.
 operation of, (P.), B., 638.
 destructor, (P.), B., 657.
 drum, for melting metals, (P.), B., 593.
 electric, A., 928; (P.), B., 168, 257, 303, 548, 1058, 1144.
 charging of, (P.), B., 548.
 controlling of, (P.), B., 1017.
 electrodes for, (P.), B., 594, 815.
 joining of sections of electrodes for, (P.), B., 1017.
 suspension of elements for, (P.), B., 498.
 resistor for, (P.), B., 29.
 carbide resistors for, (P.), B., 167.
 resistor support for, (P.), B., 69.
 for heating above 1100° C., (P.), B., 934.
 for brazing, (P.), B., 1104.
 for dental work, (P.), B., 641.
 for enamelling, power cost of, B., 848.
 for melting of glass, (P.), B., 766.
 for bright annealing of non-ferrous metals, B., 1014.
 for melting metals, (P.), B., 1104.
 for melting of light metals, (P.), B., 640.
 for metal articles, (P.), B., 724.
 for smelting of metals, (P.), B., 1058.
 for tempering metals, (P.), B., 497.
 of fluorite, B., 891.
 for micro-analysis, A., 189.
 annealing, (P.), B., 815.
 doors for, (P.), B., 209.
 arc, (P.), B., 594*.
 propagation of endothermic reactions in powders in, (P.), B., 1016.
 are and induction, (P.), B., 69.
 Detroit rocking, for production of iron, B., 165.
 glass-melting, (P.), B., 498.
 high-temperature, (P.), B., 1144.
 windings and refractory shapes for, B., 725.
 induction, (P.), B., 167, 497, 640, 934, 1017*, 1058, 1144.
 earthing charge in, (P.), B., 498.
 generation of alternating currents for, (P.), B., 594.
 crucibles for, (P.), B., 766.
 inductor coils for, (P.), B., 304.
 refractory materials for, B., 633.
 heating of non-conductors in, (P.), B., 981.
 refining of metals in, (P.), B., 723.
 for melting of metals, (P.), B., 1016.
 with ferromagnetic muffle, A., 703.
 coreless, theory of, B., 848.
 winding of, (P.), B., 893.
 melting of metals in, (P.), B., 723.
 for production of steel, B., 814.
 crucible, (P.), B., 303.
 high-frequency, (P.), B., 167.
 low-frequency, B., 1144.
 metal-refining, (P.), B., 594.
 laboratory, shelf to increase ashing capacity of, A., 189.
 muffle, A., 593.
 resistance, mounting of heating elements in, (P.), B., 934.
 heating grids for, (P.), B., 725.
 for hardening of metals, (P.), B., 70*.
 metal-refining, (P.), B., 594.
 rotary, (P.), B., 257.
 shaft, for treating metal scrap, (P.), B., 723.
 three-phase, (P.), B., 1144.
 vertical-shaft, for smelting of ores, etc., (P.), B., 640.

- Furnaces, gas-heated, B., 1029.
 glass-annealing, sole for, (P.), B., 296.
 glass-melting, insulation of, B., 719.
 heat-treatment, (P.), B., 119, 277, 422, 865, 950.
 for iron, (P.), B., 207.
 for leaf springs, (P.), B., 891.
 for metals, B., 1096.
 for metal bars, etc., (P.), B., 638.
 for metal sheets, etc., (P.), B., 950.
 for wire, (P.), B., 725.
 high-temperature, for metallography, A., 457.
 industrial, refractory natural stone for, B., 491.
 laboratory, for reactions, A., 703.
 with low gas consumption, A., 1028.
 melting, (P.), B., 997.
 for metals, (P.), B., 255, 593.
 for metals of low melting point, (P.), B., 1143.
 for metals and heat treatment of metal articles, (P.), B., 723.
 metallurgical, (P.), B., 163, 447, 1143.
 muffle, A., 1264.
 continuous, (P.), B., 48.
 open-hearth, (P.), B., 163, 181, 447, 517, 865, 1057, 1077.
 combustion in, B., 97.
 reaction in gases in, B., 927.
 control of excess air in, B., 807.
 stationary and tilting, B., 885.
 pulverised coal, (P.), B., 790.
 powdered fuel, (P.), B., 289, 329, 614, 865.
 firing devices for, (P.), B., 236.
 for locomotives, etc., (P.), B., 795.
 pyrometric portable cone-equivalent, B., 321.
 recuperative, (P.), B., 786.
 regenerative, (P.), B., 1077.
 reversing valves for, (P.), B., 96, 790.
 reversing, (P.), B., 422, 909.
 smelting, with gas and air regenerators, (P.), B., 398.
 retort, for reduction of ores, (P.), B., 723.
 for roasting of ores, (P.), B., 980.
 reverberatory, for smelting, (P.), B., 1015.
 regenerative, (P.), B., 825.
 roasting, for metalliferous materials, (P.), B., 228*.
 rotary, (P.), B., 182.
 firing of, (P.), B., 997.
 lining for, (P.), B., 182.
 for metals, (P.), B., 980.
 drum, (P.), B., 1125.
 rotary-hearth, (P.), B., 93, 277, 613, 1029.
 rotary tube, with removable stirrer arms, (P.), B., 139.
 shaft, reduction of dust losses from, (P.), B., 745.
 distribution of charges in, (P.), B., 517.
 Siemens-Martin, regenerators of, (P.), B., 398, 496.
 smelting, (P.), B., 846.
 oil-, down-blast, (P.), B., 1057.
 tube, pyrogenic decomposition in, B., 828.
 tubular, rotary, (P.), B., 865.
 tunnel, continuous car, operation of, (P.), B., 93.
 Eurobenzoin, derivatives of, A., 959.
 Furoic acid, methyl ester, nitroacetate of, A., 627.
 Furoic acid, 5-amino-bromo- and -nitro-, acetyl derivatives, and 5-iodo-, A., 1422.
 Furylacrylic acid, esters of, action of hydroxylamine on, A., 232.
 2-Furyl benzamidomethyl ketoxime, A., 232.
 β -Furylbutyrophene, *p*-bromo- γ -nitro-, and γ -nitro-, A., 360.
 β -2-Furyl- $\alpha\alpha$ -dimethyl- β -ethylpropio-phenone, A., 1069.
 β -2-Furyl- $\alpha\alpha$ -dimethyl- β -propylpropio-phenone, A., 1069.
 δ -2-Furylheptan- β -one, and its semicarbazone, A., 1069.
 γ -2-Furylhexan- ϵ -one, and its semicarbazone, A., 1069.
 Furylideneacetone, action of mixed magnesium organic compounds on, A., 1069.
 Furyl ketones, synthesis of, with sodamide, A., 1069.
 β -2-Furyl- α -methyl- β -ethylpropio-phenone, A., 1069.
 δ -2-Furylmethylheptan- β -one, and its semicarbazone, A., 1069.
 γ -2-Furyl- β -methylhexan- ϵ -one, and its semicarbazone, A., 1069.
 2-Furyl methyl ketoxime, A., 232.
 γ -Furyl- β -methyl- $\delta\beta$ -propenyldienecyclohexylamine, and its derivatives, A., 343.
 β -2-Furyl- α -methyl- β -propylpropio-phenone, A., 1069.
 Furylisooxazolone, and amino-, benzoyl derivative, A., 232.
 β -2-Furyl- β -phenyl- $\alpha\alpha$ -dimethylpropio-phenone, A., 1069.
 β -2-Furyl- β -phenyl- α -ethylpropio-phenone, A., 1069.
 β -2-Furyl- β -phenyl- α -methylpropio-phenone, A., 1069.
 β -2-Furyl- β -phenylpropio-phenone, A., 1069.
 β -2-Furylpropionic acid, *mono*- and *di*-amino-, derivatives of, A., 232.
 β -2-Furyl- β -propylpropio-phenone, and its semicarbazone, A., 1069.
 3-(2'-Furyl)-1:2:3:4-tetrahydro- β -naphthoquinoline-1-carboxylic acid, A., 237.
 β -2-Furyl- $\alpha\alpha\beta$ -triethylpropio-phenone, A., 1069.
 Fusain, origin of, A., 818.
 combustion of, B., 659.
 analysis of, B., 323.
 determination of, B., 5.
Fusarium, fermentation by, A., 1092.
 Fuses, electric, (P.), B., 225.
 time, firedamp-proof, for blasting, (P.), B., 1028.
 Fusion under pressure, interpolation formulae for, A., 1222.
- G.
- Gadolinium, spectra of, A., 780.
 furnace spectrum of, A., 7.
 ionised, energy levels of, from ultra-violet absorption spectra, A., 1210.
 determination of basicity of, by X-ray analysis, A., 1261.
 Galactal, A., 1400.
 Galactonic acid, and its lactone, mutarotation and rotatory dispersion of, A., 1214.
d-Galactonic acid, decarboxylation of, A., 1037.
 Galactose, speed of crystallisation of, B., 1115.
 metabolism of. See under Metabolism.
 in diet, A., 1338.
 excretion of, after ingestion, A., 763.
 p-bromophenylhydrazone, A., 1400.
 phenylacethydrazone, A., 475.
 intravenous, assimilation of, A., 1086.
d-Galactose dibenzyl- and phenyl-*p*-chlorobenzyl-hydrazones, A., 938.
 aldehydoGalactose *penta*-acetate nitrophenyl-, phenyl-, α -phenyl- α -benzyl-, and α -phenyl- α -methyl-hydrazones, A., 1276.
 Galactose-6-phosphoric acid, barium salt, A., 1148, 1393.
 4- β -Galactosidomannonic acid, and its calcium salt, A., 940.
 4-Galactosidomannose, and its methylated derivatives, A., 200, 939.
 4-Galactosido- α -methylmannoside, and its hepta-acetyl derivative, A., 200.
 3- β -Galactosidylcyanidin chloride, A., 1425.
 3- β -Galactosidylpeonidin salts, A., 1425.
d-Galacturonic acid, decarboxylation of, A., 1037.
 Galena, etching of, by hydrochloric acid, A., 548.
 synthetic, use of, in radio detectors, B., 891.
 Gall bladder, function of, A., 1452.
 absorption of calcium by, A., 1447.
 Gallic acid, influence of tannin and colloids on crystal form and solubility of, A., 226.
 action of emetics on, A., 1174.
 determination of, A., 752.
 Gallium, A., 817.
 extraction of, from germanite, B., 495.
 electrical resistance of, A., 674.
 coefficient of expansion of, A., 899.
 Gallium salts, curative action of, in syphilis and trypanosomiasis, A., 865.
 Gallium determination :—
 determination of, A., 1261.
 determination of, in the organism, A., 1088.
 determination and separation of, A., 927.
 Gallocyanic dyes, manufacture of, (P.), B., 713.
 Gallo-tannin, action of tannase on, A., 983.
 Gallstones, formation of, A., 977.
 human, heavy metals in, A., 1083.
 Galvanised articles, treatment of, (P.), B., 448.
 Galvanising, (P.), B., 27, 164, 305.
 mechanism of, B., 976.
 utilisation of waste from, (P.), B., 638.
 heat treatment of metal wire and strip prior to, (P.), B., 164.
 of sheet metal, (P.), B., 352.
 hot, with zinc and cadmium, B., 445.
 Galvano-luminescence, A., 1212.
 Galvanometer for conductivity of solutions, A., 1387.

- Garbage, incinerator for, (P.), B., 1156.
treatment of, (P.), B., 1076.
- Garcinia gambogia*, rind of fruit of, A., 1341.
- Garcinia mangostana*, resin of, A., 960.
- Garnet, crystal structure of, A., 60.
- Gas, production of, (P.), B., 527.
from garbage, (P.), B., 576.
from semi-coking of lignite, conversion of, B., 748.
dehydration of, B., 523.
- Gas, brown-coal, B., 790.
- coal, manufacture of, (P.), B., 287, 430, 432.
apparatus for, (P.), B., 831.
cracking process in, B., 324.
evaluation of coal for, B., 1127.
use of clean coal in, B., 704.
intermittent vertical chambers and coal- and coke-handling plant for, at Southall, B., 705.
utilisation of by-products from, (P.), B., 331.
by-product ammonia in, B., 99.
production of coke and, in intermittently operated oven chambers, (P.), B., 1082.
technology of, B., 1033.
purification of, (P.), B., 831, 939, 1083.
plant for, B., 186.
with production of fertilisers, (P.), B., 959.
effect of temperature and moisture on efficiency of iron oxides for, B., 1033.
organic bases for, B., 617.
preparation of potassium or sodium ferrocyanide in, (P.), B., 793.
humidity control in, B., 186.
treatment of products from, (P.), B., 1037.
- electrical cleaning of, B., 209.
- sodium thiocyanate for drying of, (P.), B., 573.
- Feld processes for extraction of ammonia and hydrogen sulphide from, B., 99.
- recovery of benzol from, B., 1128.
- removal of carbon monoxide from, B., 186.
- removal of carbon disulphide from, (P.), B., 793.
- removal of hydrogen sulphide from, by absorption, B., 675.
- effect of humidity in removal of hydrogen sulphide from, B., 99.
- removal of naphthalene from, (P.), B., 6, 192, 331, 1130.
- desulphurisation of, (P.), B., 662.
- removal of tar from, prior to recovery of oil, (P.), B., 619.
- prevention of gum formation in distributing systems for, (P.), B., 103.
- adjustment of density and calorific value of, (P.), B., 191.
- influence of dry and wet cleaning of coal on, B., 913.
- dilution of, B., 828.
by producer gas, B., 870.
by steaming in chamber ovens, B., 870.
by steaming in vertical retorts, B., 828.
- waste-gas diagram for combustion of, B., 428.
- products of combustion of, B., 100.
- combustion of mixtures of, with hydrogen and methane, A., 1371.
- firing of round porcelain kilns with, B., 247.
- treatment of, with tetralin, B., 428.
- nitrogen oxides in, B., 956.
- purification of light oils from, (P.), B., 10.
- horizontal-retort, dilution of, B., 828.
- determination of hydrogen and methane in, B., 791.
- use of steel tubes in Jäger's method for determination of nitrogen in, B., 748.
- determination of tar fog in, B., 428.
- coke-oven, purification of, (P.), B., 103.
- separation and utilisation of constituents of, B., 1128.
- use of nickel and copper salts for removal of hydrogen cyanide from, B., 573.
- removal of light oil from, B., 791.
- removal of nitric oxide from, B., 1033.
- treatment of, (P.), B., 191.
- production of hydrogen from, (P.), B., 526.
- preparation of hydrogen and its mixtures with nitrogen from, B., 324, 326.
- dilution of, with flue gas, (P.), B., 379.
- and illuminating, removal of sulphur from, (P.), B., 959.
- combustible, production of, (P.), B., 10, 53, 287, 330, 793, 914, 958, 1083.
- Gas, combustible, generation of, (P.), B., 576.
measurement of calorific value of, (P.), B., 234.
automatic control of calorific value of, (P.), B., 1036.
cooling of, (P.), B., 191.
treatment of, to increase carbon monoxide content, (P.), B., 1130.
free from carbon monoxide, production of, (P.), B., 1083.
detection of, in air, (P.), B., 960.
electrolytic, ignition of, by electric sparks, A., 174.
explosions of mixtures of acetylene and, A., 689.
- fuel, manufacture of, (P.), B., 191.
from bituminous coal, (P.), B., 287.
by anaerobic fermentations, B., 86.
apparatus for, (P.), B., 233.
removal of benzol and its homologues from, (P.), B., 234.
heating and illuminating, production of, (P.), B., 959.
high-grade hydrogen-rich, production of, (P.), B., 288.
high-temperature, from Esthonian shale, properties of, B., 186.
mixed hydrocarbon and water-, manufacture of, (P.), B., 959.
illuminating, manufacture of, (P.), B., 233.
indicator for detection of, in air, (P.), B., 226.
mixed, energy exchange in, A., 1232.
- natural, B., 283.
removal of acidic gases from, by organic bases, B., 924.
absorption of gasoline from, (P.), B., 145.
removal of light hydrocarbons from, (P.), B., 11.
separation of, from crude oils, (P.), B., 663.
oxidation of, (P.), B., 527.
of Bulgaria, krypton and xenon in, A., 594.
Italian, A., 1030.
- oil, manufacture of, (P.), B., 236*, 526, 831, 1036.
vaporisation of heavy oils in, (P.), B., 382.
generators for, (P.), B., 1083.
production of mixtures of water-gas and, (P.), B., 9, 103.
organic sulphur compounds in, B., 428.
- mixed oil and water-, production of, (P.), B., 749.
- producer, manufacture of, (P.), B., 233, 288, 431, 872, 1083.
apparatus for, (P.), B., 471.
effect of sodium carbonate on, B., 466.
oven for, (P.), B., 431.
cooling and scrubbing apparatus for, (P.), B., 9.
and water, production of mixtures of, (P.), B., 288.
refinery, calculation of heating value of, B., 913.
- town, partial dehydration of, B., 523.
removal of naphthalene from, by tetralin, B., 466.
non-poisonous, production of, (P.), B., 959.
- water, equilibrium of formation of, A., 41, 564; B., 325.
influence of various forms of carbon on formation of, B., 747.
production of, (P.), B., 145, 191, 233, 379, 432, 526, 662, 793, 1083.
apparatus for, (P.), B., 144, 330, 471, 579.
in horizontal chamber ovens, B., 573.
heating of regenerator chambers in, (P.), B., 145.
influence of pressure on, B., 1128.
from powdered carbon, (P.), B., 145.
carbon and thermal balances in, B., 706.
increasing rate of, from coke, B., 747.
with addition of oxygen, A., 307.
manufacture of mixtures of oil gas and, (P.), B., 9, 103.
generators for, (P.), B., 103, 234, 576, 662, 959, 962.
equilibrium of, A., 1233.
measurement of blue- and blow-gases formed in, B., 282.
electrical production of hydrocarbons from, B., 913.
mechanism of formation of higher hydrocarbons from, B., 468.
conversion of organic sulphur compounds in, to hydrogen sulphide, B., 230.
- carburetted, manufacture of, B., 99; (P.), B., 191, 576, 709, 793, 1000.
apparatus for, (P.), B., 831, 1036.
of regulated nitrogen content, manufacture of, (P.), B., 872.
- Gases, manufacture of, from hydrocarbons and hydrocarbon oils, (P.), B., 330.
electrolytic apparatus for, (P.), B., 934.
laboratory apparatus for, (P.), B., 571.
determination of atomic distances in, A., 287.
effective molecular cross-section of, A., 141.
towards protons, A., 782.
mean free path of electrons in, A., 665.
space charges in, at low pressures, A., 409.
effects of radiation in, A., 1139.

Gases, effect of field of attraction on, A., 1217.

Raman spectra of, A., 787.

Raman scattering in, A., 1111.

X-ray absorption in, A., 138.

scattering of X-rays by, A., 1105, 1205.

refraction and dispersion of, A., 1214.

magnetic susceptibility of, A., 141, 155.

effect of resolving power on absorption coefficient measurements of electrons in, A., 278.

recoil atoms in, A., 279.

ionisation of, by canal rays, A., 13.

molecular ionisation potentials in, in electric field, A., 147.

formation of negative ions in, A., 279.

scattering of electrons in, A., 278, 782, 1107, 1206, 1347.

motion of slow electrons in, A., 782.

conductivity of, in electric fields, A., 1112.

Kerr effect in, A., 1113, 1335.

apparatus for passing electric current through, (P.), B., 498.

electric discharge in, A., 2, 403, 539; (P.), B., 209.

films on exploring electrodes in, A., 1104.

initiation of electrodeless discharge in, A., 1.

action of glow discharge on, A., 330.

passage of protons through, A., 1107.

dipole moment at interface of liquids and, A., 1213.

equations of energy and entropy of, A., 1362.

thermal conductivity of, A., 293, 417.

calculation of molecular heat of, A., 552.

specific heat of, from vapour pressure curves, A., 417.

apparatus for determination of, at high pressures, A., 293.

specific heat charts for, A., 156.

measurement of temperature and specific heat of, A., 1361.

heats of wetting of, and of adsorption on zinc oxide, A., 559.

thermo-dynamic law for, A., 31.

apparatus for heat-treatment of, (P.), B., 281.

heating apparatus for, (P.), B., 998.

tubular heat exchanger for preheating of, (P.), B., 1125.

liquefaction of, (P.), B., 3, 571, 869.

plant for, (P.), B., 3.

and syntheses under pressure, B., 880.

liquefied, delivery pump for, (P.), B., 789.

dielectric constants of, A., 410.

vaporisation of, (P.), B., 323.

containers for vaporisation of, for welding, etc., (P.), B., 998.

vessels for storage and transport of, (P.), B., 746.

of low boiling point, storage and transportation of, (P.), B., 704.

dew point of, B., 745.

apparatus for solidification of, (P.), B., 522.

compressibility of, A., 899.

pressure regulator for, A., 1388.

apparatus for experiments with, at high pressures, A., 59.

application of nomograms to, B., 93.

volume relations of, at high pressures, B., 701.

apparatus for measurement of partial pressures of, in solution, A., 1388.

temperature coefficient of friction of, A., 1004.

adsorption of, A., 1120; (P.), B., 371.

theory of, A., 298.

from a current of air, A., 419.

by glass walls, A., 558.

by metals precipitated from vapour, A., 1120.

by minerals, A., 34, 1120.

by porous solids, A., 558.

electrical condition of hot surfaces during, A., 1006.

adsorption time of, A., 34.

desorption of, from plane glass surfaces, A., 558.

from walls of closed systems, A., 795.

solubility of, A., 1365.

in liquids at high pressure, A., 793.

energy and entropy of, A., 295, 793.

kinetic theory of, A., 39.

van der Waals' forces in, A., 675.

second virial coefficient for, A., 295.

equilibria between water and, A., 1234.

combustion of, in electric discharge, A., 44, 1249.

ignition of, A., 1240.

combustion limits of mixtures of air and, at low pressures, A., 1240.

explosions of, in closed containers, A., 1371.

"after-burning" in, A., 1240.

Gases, influence of foreign gases on decomposition of, A., 436.

combination of, with potassium permanganate, A., 1227, 1228.

cleaner for, (P.), B., 1079.

washing of, (P.), B., 659.

drying of, (P.), B., 960.

furnaces for, (P.), B., 825.

purification of, (P.), B., 191, 288, 432, 527, 704.

by diffusion, (P.), B., 1127.

electrically, B., 848.

by washing with organic liquids, (P.), B., 103.

material for, (P.), B., 379, 432.

electrical control of purity of, (P.), B., 767.

recovery and separation of, by adsorption, (P.), B., 521, 868.

removal of ammonia and hydrogen sulphide from, (P.), B., 103, 432, 576.

separation of condensate from, (P.), B., 1036.

removal of carbon disulphide and naphthalene from, (P.), B., 831.

electrical apparatus for removal of corrosive materials from, (P.), B., 1145.

removal of dust from, (P.), B., 1126.

apparatus for precipitation of dust from, (P.), B., 323.

apparatus for separation of dust from, (P.), B., 522, 616, 911.

electrical precipitation of dust from, (P.), B., 725, 1145.

cyclone apparatus for removal of suspended material from, (P.), B., 305.

electrical precipitation of particles from, (P.), B., 1059.

apparatus for, (P.), B., 123, 168, 549.

electrodes for, (P.), B., 168, 549.

apparatus for separation of fat, etc., from, (P.), B., 169*.

removal of hydrogen sulphide from, with formation of zinc sulphide, (P.), B., 234.

apparatus for removal of substances like naphthalene from, (P.), B., 234.

removal of oxygen from, (P.), B., 833.

removal of sulphur from, (P.), B., 1036.

removal of sulphur compounds from, (P.), B., 148*, 191, 527.

desulphurisation of, (P.), B., 10, 192.

separation of vapours from, (P.), B., 911, 1079.

filters for, (P.), B., 954, 1126.

tubular filters for, (P.), B., 868, 911.

treatment of, with liquids, (P.), B., 704.

apparatus for, (P.), B., 571.

packing for chambers for, (P.), B., 1126.

by spraying, (P.), B., 49.

and their mixtures, (P.), B., 281.

contact apparatus for liquids and, (P.), B., 616, 789, 954, 1031, 1079, 1126, 1127.

treatment of materials with, (P.), B., 50*.

contact apparatus for solids and, (P.), B., 702.

acoustical indication of changes in, (P.), B., 826.

counter for bubbles of, A., 1027.

effect of velocity ratio in mixing of, B., 227.

high-pressure charging of metals with, A., 154.

hard adsorbent material for storing, (P.), B., 281.

formula for rate of discharge of, from vessels, A., 676.

control of supply of, at definite temperatures, B., 465.

withdrawal of, at low pressure from high-pressure vessels, (P.), B., 1127.

with solids in suspension, distributors for, (P.), B., 141.

containing sulphur dioxide, fine-cleaning of, electrically, (P.), B., 540.

lamps for detection of, (P.), B., 874.

volumetric testing apparatus for, (P.), B., 425.

determination, transformation, and removal of organic sulphur in, B., 1033.

Gases, acidic, separation of, (P.), B., 521.

monatomic, electron distribution in atoms of, A., 1106.

diatomic, scattering by, A., 1205.

triatomic, molecular structure of, A., 287.

blast-furnace, electrical purification of, by the Lurgi process at the Lübeck ironworks, B., 815.

boiler-furnace, catalysts for removal of sulphur dioxide from, B., 613.

compressed, manufacture of, from liquefied gases, (P.), B., 323.

physical properties of, A., 553.

porous masses for storage of, (P.), B., 228.

electronic, energy exchange in, A., 141.

exhaust, purification of, (P.), B., 527.

explosive, mixed, reduction of explosiveness of, (P.), B., 1123.

- Gases**, flue, plant for electrical purification of, B., 815.
 centrifugal separation of dusts from, (P.), B., 868.
 treatment of, (P.), B., 95, 788.
 apparatus for, (P.), B., 281.
 prevention of condensation of moisture from, (P.), B., 323.
 separation of grit and sulphurous fumes from, (P.), B., 49.
 paint resistant to, B., 768.
 and furnace, purification of, (P.), B., 281.
 furnace, electrical purification of, (P.), B., 549.
 conditioning of, before purification, (P.), B., 49.
 apparatus for removal of dust from, (P.), B., 323.
 waste, control of humidity in electrical purification of, (P.), B., 892.
 hot or corrosive, removal of solid particles from, (P.), B., 425.
 from destructive hydrogenation, fractional condensation of, (P.), B., 191.
 ideal, equation for, A., 406, 429.
 at high temperatures, A., 995.
 industrial, apparatus for treatment of, (P.), B., 522.
 extraction of sulphur from, (P.), B., 576.
 inert, ionisation of, by X-rays, A., 1346.
 crystal structure of, A., 27.
 interaction of, A., 17.
 liquefied, surface energy of, A., 559.
 inflammable, electric combustion of, A., 571.
 apparatus for indication of, (P.), B., 432.
 detection of, in air, (P.), B., 960.
 determination of inflammability of mixtures of air and, (P.), B., 527.
 ionised, dielectric constants and conductivity of, A., 285, 410.
 natural vibration of, A., 1109.
 Coulomb's law applied to, A., 666.
 reactions of, A., 920.
 light, scattering of X-rays by, A., 413.
 mixed, heat distribution in production of, from coal-gas, water-gas, and producer gas, B., 99.
 liquefaction and separation of, (P.), B., 50*.
 diffusion constants of, A., 418.
 viscosity, thermal conductivity and diffusion in, A., 32, 1117, 1223.
 heat-treatment of, (P.), B., 234.
 spark ignition of, A., 1131.
 explosions of, in bombs, A., 1131.
 recovery of carbon disulphide from, (P.), B., 709.
 separation of, (P.), B., 95, 96, 323, 789, 954, 1079.
 by liquefaction, (P.), B., 789, 868.
 calculation of equilibria in, A., 307.
 apparatus for catalytic treatment of, (P.), B., 521.
 of low boiling point, separation of, (P.), B., 954, 998.
 combustible, production of, (P.), B., 709.
 liquefied, separation of, (P.), B., 840.
 spectrographic analysis of, A., 185.
 apparatus for analysis of, B., 186.
 detection and determination of carbon monoxide in, (P.), B., 489.
 moist, entropy and enthalpy of, A., 417.
 non-oxidising, production and storage of, (P.), B., 869.
 paramagnetic, influence of magnetic field on thermal conductivity of, A., 31.
 poisonous, structures for protection against, (P.), B., 40, 784.
 warning devices for, (P.), B., 784.
 impregnation of, with warning gases, (P.), B., 996.
 removal of, from air, (P.), B., 864.
 propellant, equation of state of, A., 554.
 rare, manufacture of, B., 881.
 purification of, (P.), B., 157.
 recoil atoms in, A., 889.
 electron couplings in, A., 135, 136.
 spectra of, A., 992.
 Zeeman effect in, A., 992.
 electric field measurements and spectroscopy of mixtures of, A., 779.
 dielectric coefficients of, A., 1113.
 effect of temperature on solubility of, in liquids, A., 159.
 separation of mixtures of, (P.), B., 841.
 real, and their mixtures, thermodynamics of, A., 39.
 refinery, uncondensed, utilisation of, B., 1034.
 saturated, properties of, A., 417.
 moisture content of, and separation of water on cooling, B., 909.
- Gases**, technical, determination of moisture in, B., 227.
Gas absorption apparatus, (P.), B., 371.
 pipette, for unsaturated hydrocarbons, A., 1144.
 Pregl micro-, A., 458.
Gas analysis, A., 330, 704; (P.), B., 425.
 filtering of gases prior to, (P.), B., 659.
 indicator for changes in volume during, (P.), B., 954.
 levelling vessel for use in, A., 929.
 nomogram for use in, B., 523.
 slow combustion pipette for, A., 330.
 of mixed hydrocarbons by oxidation of phosphorus, A., 587.
 combustion, A., 457.
 micro-, A., 1027.
Gas analysis apparatus, A., 886; (P.), B., 616, 789.
 gas pumps for use in, (P.), B., 522.
 control of flow of gas through, (P.), B., 571.
 absorption pipette, A., 1388.
 automatic, B., 1.
 Orsat, A., 593.
 portable, B., 1125.
Gas black, comparison of, with acetylene black and lampblack, B., 6.
Gas burners, (P.), B., 56, 795, 1085, 1131.
 for furnaces, (P.), B., 289, 874.
 for hot-blast stoves, furnaces, etc., (P.), B., 751.
Gas cartridges, containing asphyxiating chemicals, (P.), B., 948.
Gas chambers, liquid seals for, (P.), B., 96.
Gas gangrene bacillus. See under *Bacilli*.
Gas generators, (P.), B., 9, 831, 959.
 production of metallurgical products in, B., 1012.
 mechanically-clinkered, (P.), B., 665.
 rotary-grate, (P.), B., 1130.
Gas holders, causes of explosion in, B., 7.
Gas mains, testing of, with ethyl mercaptan, B., 467.
Gas masks, B., 46; (P.), B., 948, 1028.
 impregnation of filters for, (P.), B., 1076.
 valves for, (P.), B., 864.
Gas meters, effect of hydrocarbons in coal gas on leather in, B., 913.
Gas oil, cycle and straight-run, cracking value of, B., 100.
 Rumanian, cracking of, B., 707.
Gas plant, domestic, for waste vegetable products, (P.), B., 833.
Gas producers, (P.), B., 56*, 102, 144, 232, 233, 431, 470, 576, 831, 958, 1036.
 furnaces for, (P.), B., 144.
 fuel distributing device for, (P.), B., 56.
 for gas engines, (P.), B., 433.
 mechanically-clinkered, (P.), B., 665.
 rotary, ash pan for, B., 870.
 Trefois, utilisation of coke breeze in, B., 5.
Gas purification apparatus, (P.), B., 95, 425, 789.
 electric, (P.), B., 640, 767, 892, 982.
 electrode for, (P.), B., 683.
 cleaning electrodes of, (P.), B., 982.
Gas reactions, electrical apparatus for, (P.), B., 1059.
 carrying-out of, at high temperatures, (P.), B., 788.
 kinetics of, A., 1014.
 at constant pressure, A., 1130.
 measurement of rate of, A., 1372.
 effect of intensive drying on velocity of, A., 314.
 effective cross sections in, A., 1371.
 thermodynamic calculation of affinities of, A., 1233.
 biological, A., 1095.
 catalytic, (P.), B., 521, 1079.
 carrying-out of, (P.), B., 869.
 in a liquid medium, B., 962.
 with high-pressure apparatus, A., 318.
 endothermic, carrying out of, (P.), B., 959.
 heterogeneous, velocity of, A., 918.
 homogeneous unimolecular, A., 1372.
 simple, A., 688.
Gas retorts. See *Retorts*, gas.
Gas scrubbers, (P.), B., 522, 1030.
Gas stereometer, A., 815.
Gas tar. See under *Tar*.
Gas wash bottles, A., 705.
Gas washing apparatus, (P.), B., 183, 281, 521.
 for removal of dust, (P.), B., 616.
 laboratory, A., 592.
 use of glycerin as drying medium in, B., 617.

- Gas works, use of glass filters in, B., 428.
 removal of hydrogen sulphide from ammoniacal liquors from, B., 748.
 disposal of liquid effluents from, B., 99.
 burners for spent oxide from, (P.), B., 1009.
 Hamburg, wet sulphur purifier for, B., 828.
- Gaseous state, A., 1004.
- Gasoline, production of, (P.), B., 915.
 recovery of, from natural gas, etc., (P.), B., 961.
 from refinery gases, (P.), B., 1053.
 molecular weight and specific gravity of fractions of, obtained in Vickers unit, B., 1034.
 purification of, (P.), B., 192.
 composition for decolorisation of, (P.), B., 972.
 colouring of, (P.), B., 1084.
 photochemical changes in, A., 1019.
 absorption of, from natural gas, (P.), B., 145, 383.
 treatment of, (P.), B., 915.
 heat-treatment of, (P.), B., 709.
 treatment of vapour of, in Vickers cracking unit, B., 618.
 sediments in condensers of Foster-Wheeler unit for distillation of, B., 1034.
 detonation and auto-ignition temperature of, B., 1082.
 testing anti-detonating properties of, B., 1082.
 gumming tendencies of pure olefines in, B., 1081.
 corrosion of copper by, B., 1000.
 constituents of gases from, from the "blaugas" cracking process, B., 618.
 for motor fuels, B., 618.
 Baku, anti-detonating properties of, B., 1082.
 commercial, treatment of, for internal combustion engines, (P.), B., 55.
 cracked, refining of, (P.), B., 619.
 analysis of, by absorption-distillation method, B., 469.
 high-grade, manufacture of, B., 829.
 Japanese, B., 1034, 1081.
 hydrocarbons in, and their properties, B., 828.
 natural, recovery of, (P.), B., 236.
 detection of iron carbonyl in, spectrographically, B., 469.
 detection of sulphur compounds in, B., 1034.
 determination of lead tetraethyl in, B., 8.
 See also Petrol.
- Gastric juice, variation in composition of, A., 381.
 secretion of, A., 757.
 effect of ultra-violet light on, A., 643.
 action of peptone on, A., 509.
 effect of irradiated ergosterol on, A., 1197.
 solubility of iron in, A., 1179.
 inhibitive action of intestinal biodialysates on, A., 112.
 acidity of, A., 861.
 effect of histamine on, A., 381.
 acidity and chloride content of, A., 381.
 allantoin and uric acid in, A., 976.
 mucus of, A., 380.
 thiocyanogen content of, and its bactericidal action, A., 643.
 in children, A., 861, 1443.
 human, substances stimulating secretion in, A., 1179.
 analysis of, after fluid test meals, A., 759.
- Gaucher's disease, lipin deposits in, A., 115.
- Gauges, clicker, flexible glass diaphragm for, A., 815.
 McLeod, A., 1264.
 Pirani pressure, A., 815.
 plug chromium-plated, resistance of, to wear, B., 446.
- Gaultheria*, glucoside from, A., 1100.
- Gaultherin*, A., 1400.
- Gaultherioside*, A., 1100.
- Gears, lubricants for, (P.), B., 832.
- Geijera Muellieri*, essential oil from, B., 781.
- Geijera parviflora*, essential oil from, B., 781.
- Geijera salicifolia*, essential oil from, B., 781.
- Geissospermine, and its salts and hydrates, A., 1313.
- Gels, theory of formation of, A., 1368.
 theory of swelling of, A., 683.
 distribution of ions in, A., 306.
 morphology of reactions in, A., 428.
 chemical reactions in, A., 1368.
 elastic, vapour-pressure measurements on, A., 1231.
- Gelatin, structure of, A., 245, 428.
 X-ray study of, B., 555.
 manufacture of, (P.), B., 506.
- Gelatin, extraction of, from leather, (P.), B., 131.
 refractive index of solutions of, A., 427.
 scattering of light by gels and solutions of, A., 21.
 influence of salts on optical rotation of, A., 1173, 1214.
 action of light and dichromate on, A., 319.
 electrophoretic velocity of, A., 564.
 membrane potential and hydrogen-ion adsorption of, A., 1125.
 isoelectric point of, A., 1009.
 dissociation constants and p_H regulating power of, A., 683.
 effect of salts on ionisation of, A., 168.
 viscosity of, in mixtures of alcohol and water, A., 1231.
 flocculation of, at the isoelectric point, A., 909.
 gelatinisation and polymorphism of, A., 971.
 swelling of, A., 38.
 influence of volume on, A., 306.
 in solutions of calcium salts, A., 1009.
 and hydration, A., 427.
 emulsifying properties of, A., 1125.
 diffusion and cataphoresis of methylene blue in, A., 1368.
 migration of silver in layers of, A., 427.
 condition of sparingly-soluble substances in, A., 1125.
 hydrolysis of, A., 1134.
 hydrolysis of mixtures of silver nitrate and, during washing, A., 428.
 formation of diketopiperazine by enzymolysis of, A., 262.
 action of ammonia on, A., 798.
 combination of, with ammonia and with hydrogen chloride, A., 1125.
 reaction of, with amylase and starch, and with urea and urease, A., 983.
 reactions between dyes, nucleic acid, and, A., 752.
 effect of lyotropic salts and tanning materials on, B., 173.
 structure of acetylated polypeptides from, A., 245.
 heat-coagulable protein from, A., 503.
 manufacture of products from, (P.), B., 310.
 manufacture of plastic masses for printing rollers, etc. from, (P.), B., 732.
 nutritive value of, A., 868.
 films, production of, (P.), B., 532, 533.
 hardening of, (P.), B., 1149.
 gels, structure of, and their gelatinisation temperature, A., 427.
 vapour pressure of, A., 167.
 diffusion in, A., 427.
 distribution of hydrochloric acid in, A., 909.
 testing of, B., 79, 600.
 membranes, equilibria with, in acetate buffer solutions, A., 1366.
 micelles, structure of, A., 27, 790.
 sols, changes in viscosity of, during gelation, A., 306.
 salting-out of, by salt mixtures, A., 167, 1125.
 solutions, osmotic pressure and micellar weight of, A., 1368.
 nutritive, for stable preparations of lees of wine, (P.), B., 460.
 photographic, B., 783.
 "pure," blue colouring matter in, B., 131.
 detection of, in cream, B., 133.
- Gelignite, manufacture of, (P.), B., 699.
- Gelsemicine, A., 871.
- Gelsemine, A., 871.
- Gelsemium alkaloids, A., 1172.
- Gems, determination of density of, A., 456.
- γ Geminorum, spectrum of, A., 7.
- Genistein, derivatives of, A., 1304.
- Genistin, and its derivatives, A., 1304.
- Gentiobial *heptaacetate*, 2-hydroxy-, and its derivatives, A., 468.
- Gentiobiose derivatives, synthesis of, A., 1040.
- β -Gentiobiosido- β -gentiobiose *tetradecaacetate*, A., 337.
- Germanium oil, total alcohols of, B., 946.
- Germs, destruction of, with alkylene oxides, (P.), B., 226.
- Germanin, behaviour of, *in vivo*, A., 981.
 union of, with protein complexes, A., 764.
- Germanite, extraction of gallium and germanium from, B., 495.
- Germanium, A., 322, 446, 1435.
 atomic weight and isotopes of, A., 1208.
 extraction of, from germanite, B., 495.
- Germanium compounds, A., 1140.
- Germanium imide, formation of, A., 322.
- dioxide, effects of overdoses of, on blood and tissues of rabbits, A., 1454.
- oxychloride and sulphate, A., 447.
- Germanic nitride, A., 322.
 oxide, toxicity of allotropic forms of, A., 1088.

Germanium :—

- Germanous nitride, A., 322.
- Germanochlorides of quinine, pilocarpine, caesium, and rubidium, A., 322.
- Germanomolybdic acid, A., 322.
- Germanium organic compounds, A., 1435.
- Germanium tetraethyl, thermal decomposition of, A., 78.
- Germanium detection :—
 - detection of, A., 455.
- Gestation in rats, effect of hypophysectomy on, A., 1194.
- "Getters," commercial, comparison of, A., 795.
- Geum urbanum* (herb bennet), carbohydrates in roots of, A., 883.
- Ghee, Indian, fatty acids and glycerides of, B., 499.
- Gibberella saubinetii*, enzymes of, A., 1342.
- Gibbsite, thermal decomposition of, A., 1029.
- Ginger, paralysis caused by, B., 135.
 - pharmacology of phenol esters in, A., 650.
- Gitoxigenin, dehydrogenation of, A., 606.
- Gladiolus*, corm treatments for, B., 1112.
 - inhibition of oxidation of sulphur by juice from, A., 1088.
- Glands, physiology of, A., 869, 878.
 - See also Mammary, Parotid, Pituitary, and Salivary glands and Thyroid.
- Glass, A., 1003.
 - constitution of, based on the laws of solutions, B., 883.
 - theory of composition of, B., 394.
 - diphasic nature of, A., 1223.
 - manufacture of, (P.), B., 842.
 - apparatus for, (P.), B., 1050.
 - electric furnaces for, (P.), B., 891.
 - conduits for use in, (P.), B., 759.
 - use of ammonium sulphate in, B., 883.
 - electrical heating of lehrs for, B., 841.
 - properties of, in relation to thermal history, B., 394.
 - melting of, B., 393.
 - theory of, B., 1049.
 - apparatus for, (P.), B., 64.
 - furnaces for, (P.), B., 973.
 - electric furnaces for, (P.), B., 766.
 - clay mixtures for pots for, B., 805.
 - tanks for, (P.), B., 158.
 - ammonium sulphate as accelerator for, B., 883.
 - effect on properties of, of continued remelting in platinum, B., 1049.
 - molten, feeding of, (P.), B., 22.
 - surface tension of, A., 1229.
 - molecular kinetics in softening of, A., 32.
 - effect of heat treatment on cooling curves of, B., 589.
 - annealing of, with conservation of heat, B., 758.
 - lehrs for, (P.), B., 633.
 - furnaces for bending of, (P.), B., 806.
 - rolling of, (P.), B., 806.
 - working of, (P.), B., 492.
 - machine for pulling, into micro-pipettes and needles, A., 815.
 - solution for polishing of, (P.), B., 541.
 - manufacture of reflecting surfaces on, (P.), B., 492.
 - tempering of, (P.), B., 805; 806.
 - thermal endurance of, B., 1049.
 - refractive index, atomic size and packing in, A., 1004.
 - production of residual double refraction in, A., 547.
 - mass spectra of, A., 546, 1108.
 - absorption and transmission of ultra-violet light by, B., 676.
 - transparency of, to ultra-violet light, A., 546; B., 883.
 - Raman effect in, A., 997.
 - thermoluminescence of, A., 22, 284.
 - electrochemistry applied to, B., 589.
 - influence of temperature on dielectric constants of, A., 555.
 - apparatus for expansion measurements of, B., 589.
 - adsorption of gases by, A., 558.
 - desorption of gases from plane surfaces of, A., 558.
 - viscosity of, between strain point and melting temperature, B., 841.
 - solubility of, in water in relation to its composition, B., 1094.
 - coloration of, by β - and γ -rays, B., 490.
 - with carbon and sulphides, B., 295.
 - influence of radiation on colour of, B., 158.
 - decolorisation of, B., 295, 296.
 - oxidation of iron and manganese in, B., 295.
 - influence of manganese oxide on, B., 883.
 - effect of mercuric iodide and ammonium chloride on, A., 1228.

- Glass, selenium dioxide as constituent for, B., 758.
- sulphur trioxide content of, B., 676.
- sealing of copper wire to, (P.), B., 812.
- sealing of tungsten or its alloys into, (P.), B., 1015.
- prevention of steaming and formation of raindrops on, (P.), B., 759, 1011.
- prevention of weathering of, (P.), B., 65*.
- production of tubes, rods, etc. of, (P.), B., 159, 202, 678.
- analysis of, B., 491.
- determination of alumina and boric acid in, B., 841.
- Glass, alkali-lime-silica, B., 676.
 - antique, examination of, B., 112.
 - beryllium, absorption of X-rays by, B., 296.
 - changeant, manufacture of, (P.), B., 1011.
 - chemical-resistant, for laboratory ware, B., 1094.
 - coloured, imparting reddish tinge to, (P.), B., 972.
 - compound, manufacture of, (P.), B., 248, 249, 492, 677.
 - "Corex," double refracting structure of, A., 18.
 - decorated, baking and annealing lehrs for, (P.), B., 633.
 - eye-protective, shade numbers and densities of, B., 112.
 - frosted, strengthening of, (P.), B., 395.
 - ground and frosted, photometric properties of, A., 282.
 - heat-absorbing, B., 883.
 - heat-resistant, coloured, (P.), B., 158.
 - laminated, (P.), B., 65, 113, 248, 1011.
 - manufacture of, (P.), B., 395, 633, 972, 1095.
 - manufacture and characteristics of, B., 633.
 - treatment of edges of, (P.), B., 973.
 - treatment of cellulose derivatives for, (P.), B., 1135.
 - lamp-bulb, prevention of weathering of, (P.), B., 65.
 - marbled or multicoloured, manufacture of, (P.), B., 158.
 - mercury, B., 676.
 - mirror, production of, (P.), B., 540.
 - non-splinterable, manufacture of, (P.), B., 633, 677, 720, 805.
 - to prevent light discoloration, (P.), B., 395.
 - opal, corrosion of tank blocks by, B., 248.
 - powdered, apparatus for coating of surfaces with, (P.), B., 633.
 - pyrex, devitrification of, B., 841.
 - surface leakage of, A., 1027.
 - insulation of, B., 490.
 - quartz, smelting of, (P.), B., 64.
 - and silicate, colour changes of, under radium rays, A., 579.
 - reinforced, manufacture of, (P.), B., 395, 541, 633.
 - manufacture of material resembling, (P.), B., 395.
 - safety, manufacture of, B., 1049; (P.), B., 395.
 - heating apparatus for, (P.), B., 22.
 - non-discolouring, (P.), B., 158.
 - sheet, manufacture of, B., 842; (P.), B., 113, 158, 248, 589, 926.
 - preheating and tempering of, (P.), B., 396.
 - reheating and cooling of, (P.), B., 760.
 - grinding or polishing of, (P.), B., 720.
 - insulation of, from a receiving surface, (P.), B., 158.
 - prevention of condensation of moisture on, (P.), B., 1095.
 - reinforced, manufacture of, (P.), B., 541.
 - wired, manufacture of, (P.), B., 633.
 - silica, moulds for manufacture of articles of, (P.), B., 65, 113.
 - soda-lime, influence of chemical composition on physical properties of, B., 349.
 - determination of soda in, B., 758.
 - soda-lime-silica, refractive index of, and effect of composition thereon, B., 841.
 - sodium metasilicate-silica, density of, B., 883.
 - tinted, manufacture of, (P.), B., 1012.
 - ultra-violet transparent, (P.), B., 112, 248, 440, 492.
 - solarised, restoration of, B., 972.
 - window, clarification of, by removal of sulphur trioxide, B., 676.
 - ultra-violet radiation of, B., 21.
- Glass articles, fragile, reinforcement of, (P.), B., 541.
 - frosted, treatment of, (P.), B., 884.
 - thin-walled, manufacture of, (P.), B., 884.
- furnaces, pot, efficiency of production in, B., 394.
 - tank, efficiency of, B., 394.
 - specifications for blocks for, B., 394.
 - effect of load on fuel consumption in, B., 393.
- plates, rolling and annealing of, (P.), B., 248.
- adhesives for uniting, (P.), B., 113.
- thin, conduction of, A., 785.
- pots, manufacture of, B., 394.
 - handling and emptying of, (P.), B., 396.
 - melting, clay mixtures for, B., 883.

- Glass sorption buckets, A., 1027.
tanks, properties of refractories for, B., 1049.
flow tests in, B., 883.
flow of glass in, B., 883.
currents and temperatures in, B., 589.
manufacture of slip-cast blocks for, B., 805.
testing of blocks for, B., 805.
ware, pot furnace for manufacture of, (P.), B., 973.
annealing lehrs for, (P.), B., 395, 678, 884, 1050.
chemical, hydrolytic stability of, B., 884.
marking of, A., 1027.
moulded, manufacture of, (P.), B., 113.
yarn, manufacture of, (P.), B., 926.
- Glass-works, mechanical handling in, B., 395.
polariscopes for use in, B., 841.
- Glauber's salt. See Sodium sulphate.
- Glauconic acids, and their derivatives, A., 524.
- Glaucinite, increasing base-exchanging properties of, (P.), B., 804.
in fossil foraminiferal shells, A., 1028.
pure, production of, for water-softening, (P.), B., 20.
- Glazes, effect of furnace atmospheres on quality of, B., 759.
moisture expansion of, B., 677.
on vases of Arezzo, boric acid in, B., 63.
ceramic, molecular formulas of, B., 1011.
influence of firing temperature and furnace gases on, B., 490.
cold, for concrete, etc., (P.), B., 159.
salt, effects of body composition and firing treatment on, B., 841.
zincless, use of lepidolite in, B., 1049.
- Glazing, vapour-, of pre-Cambrian shales, B., 63.
- Gleditschia monosperma*, effect of freezing on wood of, B., 760.
- Gliadin, A., 990.
preparation of, A., 1173.
isolation of bases from, A., 1430.
- Globin, preparation of, A., 1173.
coagulation of, and its reversal, A., 972.
combination of, with hæmatins, A., 1175.
- Globulin, molecular weight of, A., 248.
serum-, influence of serum lipins on precipitation and determination of, A., 754.
horse serum, phase rule equilibria of, A., 376.
determination of, in cerebrospinal fluid, A., 861.
- Globulins, antitoxic, refractive index constant for, A., 1095.
- Glucal, structure of, A., 1399.
tetraacetate, hydroxy-, phenylosazone of, A., 1400.
- Glucal, hydroxy-, phenylosazones of, A., 939.
- Glucals, substituted, action of perbenzoic acid on, A., 1400.
- d*-Glucal, identity of, with *d*-mannal, A., 1038.
- ψ -Glucal α -methyl-lactolide, A., 336.
- ψ -Glucals, structure of, A., 336.
- Glucocortic acid, A., 337.
- d*- α -Glucose heptose dibenzyl- and phenyl-*p*-chlorobenzyl-hydrazones, A., 938.
- Gluconic acid, preparation of, A., 824.
production of, by moulds, A., 1457.
ammonium salt, (P.), B., 135.
calcium salt, effect of administration of, A., 515.
heptadecylamine salt, A., 77.
- Gluconose, and its bis-*p*-nitro-phenylhydrazones, A., 1275.
- α -Glucopyranose units, presence of, in starch and glycogen, A., 941.
- Glucosamic acid, deamination of, its derivatives, A., 1402.
- Glucosamine, and its derivatives, syntheses with, A., 470, 830.
detection and determination of, A., 1081.
- Glucosaminodimannose, from proteins of ox-blood, A., 1175.
- Glucose, production of, B., 133.
from manihot root, B., 1023.
crystal structure of various forms of, A., 790.
"active," concentration of, and reaction with mild oxidants, A., 1399.
- d*-Glucose. See Dextrose.
- Glucoseoxime, reactive form of, A., 467.
- Glucose-6-phosphate, identity of, with Robison's ester, A., 1148.
- α -Glucosidase, fission of disaccharides by, A., 983, 1331.
from yeast, fission of sucrose by, A., 653.
- α -Glucosidases, specificity of, A., 654, 873, 1190.
- Glucosides, A., 1400.
separation of, A., 463.
synthesis of, A., 201, 468, 1400.
pharmacology of preparations of, A., 1186.
- Glucosides, natural, A., 73, 1040.
detection of, microchemically, A., 661.
in plants, A., 777.
- Glucosides. See also :—
Æsculetin. Gaultherioside.
Æsculin. Genistin.
Dactylin. Lanadin.
Daidzin. Salipurposide.
Digoxigenin. Salireposide.
Frangularoside. Sinalbin.
Frangulin. Sinigrin.
- β -*d*-Glucosidoferulic acid, synthesis of, A., 201.
- 4-Glucosido- α -mannose, preparation and optical rotation of, A., 201.
rotation of, A., 200.
and its methylated derivatives, A., 939.
- 4-Glucosido- α -methylmannoside, and its hepta-acetyl derivative, A., 200.
- Glucosidostyracitols, and their hepta-acetates, A., 467.
- 3-Glucosidouracil, and its derivatives, A., 100.
- m*-Glucosidoxybenzaldehyde, synthesis of, A., 621.
- 3- β -Glucosidoxy-5:7:3':4'-tetrahydroxyflavylium salts, A., 1423.
- 3- β -Glucosidoxyindole, 6-bromo-. See Indican, 6-bromo-.
- Glucosidyl halides, effect of a 2-*p*-toluenesulphonyl group on reactivity of halogen atom of, A., 1400.
- 5- β -Glucosidylhirsutidin chloride, A., 1426.
- 4- β -Glucosidyl-2-*O*-methylphloroglucinaldehyde, A., 1424.
- β -Glucosidylpelargonidin salts, A., 1424.
- 3- β -Glucosidylpeonidin salts, A., 1425.
- Glucosone acetates, crystalline, and their transformation, A., 1275.
- 1-Glucosoxanthraquinone, A., 940.
- Glucosoxanthraquinone-9-imines, *mono*- and *di*-hydroxy-, derivatives of, A., 940.
- Glucosulphatase, A., 1331.
- Glucosylalizarin, sodium salt, A., 826.
- Glucosyl-6-amine, hexabenzoyl derivative, and isopropylidene ethers, triacetyl and tribenzoyl derivatives, A., 71.
- Glucosylchrysazin, sodium salt, A., 826.
- 2-Glucosyloxanthrarufin, sodium salt, A., 826.
- 2-Glucosylpurpurin, sodium salt, A., 826.
- 2-Glucosylquinalizarin, sodium salts, A., 826.
- β -Glucosylthiosulphate, and its derivatives, A., 939.
- Glue, structure of, A., 428.
production of, from leather waste, B., 131.
from leather, (P.), B., 131.
from chrome-leather waste, B., 453.
X-ray study of, B., 555.
immunisation of, (P.), B., 83.
for wood, (P.), B., 843.
chrome leather and bone, jelly strength of skin of, in relation to viscosity and chromium content of material, B., 1148.
hide and bone, evaluation of, B., 555.
pellet, manufacture of, (P.), B., 897.
Urban, colloid-chemical nature of, B., 555.
vegetable, (P.), B., 855.
- Glukhorment, effect of, on cellular fixation of dextrose, A., 397.
- Glutaconic acid, *dicyano*-, diethyl ester, A., 471.
- Glutaconic acids, A., 604.
and their esters, structure of, A., 608.
- Glutaconic acids, cyano-, esters, structure of, A., 608.
- Glutamic acid, sodium salt, manufacture of, (P.), B., 631.
- Glutaranil, A., 339.
- Glutaric acid, polymorphism of, as a function of temperature, A., 1036.
- Glutaric acid, α -hydroxy-, production of, by enzyme of germinated peas, A., 873.
- Glutaryl-diphenylcarbamide, A., 830.
- Glutaryl-diurethane, A., 830.
- Glutathione, A., 498, 607.
synthesis of, in the adrenals, A., 642.
effect of irradiation on, in organs, A., 1330.
oxidation of, A., 498.
by living cells, A., 1187.
as anticatalyst in oxidation with molecular oxygen, A., 691.
cleavage of, in aqueous solution, A., 607.
in relation to growth and tumours of plants, A., 989.
activation of animal and plant proteases by, A., 393.
effect of, on tissue respiration, A., 1182.
metabolism of. See under Metabolism.
as activator of enzymic saccharification of starch, A., 1190.

- Glutathione** in blood, A., 252.
 in avertin anaesthesia, A., 120.
 crystalline, effect of, on oxygen consumption of tissues, A., 763.
 reduced and total, determination of, in liver, A., 508.
 determination of, A., 1178.
 iodometrically, A., 974.
 in tissues, A., 860.
- Glutelin**, rice, alkali salts of, and their conductivity, A., 686.
- Glutelins**, A., 245.
 optical rotation of, A., 245.
- Gluten**, colloid chemistry of, B., 177, 991.
 dispersivity of, in lactic acid solutions, B., 737.
 determination of quality of, in wheat and flour, B., 943.
 dry, determination of, B., 219.
 flour, effect of plant lecithin on, A., 39.
- Glutenin**, A., 990.
 amino-acids of, A., 661.
- Glycæmia** in infancy, A., 859.
- Glyceraldehyde**, preparation of, A., 604.
d-Glyceraldehyde, biochemical preparation of, A., 266.
dl-Glyceraldehyde, and its acetal, preparation of, A., 824.
 heat of combustion of, A., 801.
- Glycerides**, separation of, A., 602, 1034.
- Glycerin**. See Glycerol.
- Glycerol** (*glycerin*), production of, by yeast, A., 393.
 manufacture of, by fermentation, (P.), B., 738.
 pure, (P.), B., 149.
 crude, purification of, B., 982.
 freezing and flow points for, B., 105.
 solid, specific heat and rate of crystallisation of, A., 672.
 oxidation of, A., 1033.
 benzyl, dibenzyl, and α -diisopropyl ethers, A., 599.
mono- and *di*-chlorohydrins, preparation of, A., 710.
 α -dimethyl ether, and its *p*-nitrobenzoate, A., 599.
 methyl ethers, preparation of, A., 599.
 trinitrate (*nitroglycerol*), separation of, from residuary acid, (P.), B., 46.
 composition of waste acids from manufacture of, B., 908.
 effect of impurities on freezing-point of, B., 1028.
 gelatinisation of, by nitrocellulose, B., 995.
 equilibria of nitrocellulose, water, and, B., 995.
 determination of maximum detonation velocity of, B., 783.
 explosive properties of mixtures of pentaerythritol tetra-nitrate and, B., 907.
 toxicity of, A., 387.
 analysis of, B., 893.
 detection of, colorimetrically, A., 462.
 determination of, in greases, B., 850.
 in wines, B., 362.
 determination of water in, B., 333.
- Glycerophosphatase** of leucocytes, A., 654.
- α - and β -Glycerophosphates, A., 1393.
 hydrolysis of, by enzymes, A., 766.
- Glycerophosphoric acid** in liming and saturation of beet juices, B., 900.
 calcium salt, detection of, colorimetrically, A., 462.
- Glycidic acids**, manufacture of, (P.), B., 13.
- Glycidyl isopropyl ether**, A., 600.
- 7-Glycinamido-2-arsinic acid**, and its sodium salt, A., 637.
- Glycine**, structure of, A., 790.
 formation of, from serine, A., 1279.
 preparation of, A., 1042.
 determination of dissociation of, electrometrically, A., 168.
 acid and base constants of, A., 308.
 oxidative deamination of, by "omega" catalysis, A., 1088.
 effect of, on amino-acids of blood and tissues, A., 118.
 on oxygen demand of surviving organs, A., 255.
 on tissue respiration, A., 1182.
 salts of, A., 75, 606.
 copper salt, absorption of light by, A., 1110.
 colour reaction of, with sodium hypochlorite and phenols, A., 1436.
- 7-Glycine-2-arsinic acid**, and its sodium salt, A., 637.
- Glycocholeic acid** from rabbit bile, A., 1179.
- Glycocholic acid**, detection of, and its crystalline additive compounds, A., 730.
- Glycogen**, A., 251, 1277.
 preparation of, from yeast, and its identity from different sources, A., 1277.
 depolymerisation of, A., 74, 202.
- Glycogen**, presence of α -glucopyranose units in, A., 941.
 equilibrium between lactic acid and, A., 513.
 phosphorus in, A., 1321.
 resynthesis of, after exercise, A., 763.
 formation of, in rats, A., 513.
 effect of starvation and drugs on distribution of, in rats, A., 764.
 in liver cultures, A., 1450.
 significance of, in liver function, A., 644.
 effect of raw egg-yolk on deposition of, in the liver, A., 513.
 decomposition of, in liver, A., 391.
 effect of mineral water administration on content of, in the liver, A., 513.
 relation of, to water storage in liver, A., 1325.
 of rabbit's liver, A., 249.
 in perfused rabbit's liver, effect of insulin on, A., 528.
 effect of insulin on, in liver and muscle, A., 268.
 in liver and muscles of rats and mice, A., 680.
 storage of, in white rats fed on *Articum lappa* roots, A., 386.
 in urine, A., 758.
 determination of, in liver, A., 642.
- Glycol**. See Ethylene glycol.
- Glycols**, and their esters and ethers, manufacture of, from alkylene oxides, (P.), B., 433.
 electric moments of, A., 895.
 oxidation of, by lead salts, A., 461.
 formation of oxides from, A., 62.
 acetylenic, oxidation of, A., 95.
 aliphatic, derivatives of, A., 1032.
 higher, diprimary, synthesis of ethers of, A., 1033.
sec- α - β -Glycols, action of thionyl chloride on, A., 819.
- Glycolase**, stability of, A., 1190.
- Glycollic acid**, conductivity of mixtures of, with hydrogen peroxide, A., 434.
 esters, manufacture of, (P.), B., 237.
- Glycollic acids**, substituted, optically active, synthesis of, A., 1154.
- Glycolyl-l-histidine**, A., 1191.
- Glycolysis**, inhibition of, A., 1455.
- Glycosuria**. See Diabetes.
- Glycuronic acid**, pyranoid structure of, A., 1036.
 orientation of, in baicalin, A., 493.
 from gum of root nodule bacteria, A., 395.
 detoxication of avertin by, A., 650.
 conjugated, excretion of, A., 980.
- Glycyl-d-alanine**, and its copper salt and derivatives, A., 768.
- Glycyl-d-alanylglycine**, and its derivatives, A., 767.
- Glycyl-d-alanyl-d-leucine**, A., 718.
- Glycyl-o-aminobenzoic acid**, A., 124.
- Glyclaminoobenzoic acids**, and their chloroacetyl derivatives, A., 984.
- Glycyanilide-p-sulphonamide**, A., 1283.
- Glycylglycine**, ethyl ester, reaction of, with dextrose, A., 943.
- Glycylglycinecarboxylic acid**, Fischer's, identity of, with carbamido-diacetic acid, A., 607.
- Glycylglycyl-d-alanine**, A., 767.
- Glycyl-l-histidine**, A., 1191.
- Glycyl-leucines**, isomeric, A., 1270.
- Glycyl-L-2-nitro-p-tyrosine**, A., 768.
- Glycyl-dl-phenyl- β -alanine**, A., 768.
- Glycylsulphanilic acid**, A., 984.
- Glycyl-p-thiocresol**, A., 1289.
- N-Glycyltoluenesulphonamide**, A., 124.
- Glycyltyrosines**, and their derivatives, A., 768.
- Glyoxalase**, A., 392.
 action of, A., 1455.
 effect of sodium iodoacetate on, A., 766.
 and co-enzyme in liver, A., 1455.
- Glyoxaline**, A., 1168.
 acetylation of, A., 1168.
- Glyoxalinoquinoline**, preparation of derivatives of, A., 743.
- Glyoxime**, dicyano-, salts and benzoyl derivatives of, A., 1274.
- Glyoximes**, A., 223.
 velocity of hydrolysis of acyl derivatives of, A., 1373.
- Glyoxylic acid**, and bromo-, ethyl esters, *mono*- and *di*-bromo-*p*-tolylhydrazones, A., 835.
p-nitrophenylhydrazone of, A., 1293.
 2:4-dinitrophenylhydrazone, A., 937.
- Gneiss** from Manitoba and Saskatchewan, A., 332.
- Goats**, tolerance of, to iodine, A., 1330.
 milk, substitute for proteins in fodder for, B., 695.
- Goat skins**, hydration of, B., 453.

- Goitre, effect of ultra-violet light on, A., 977.
 relation of iodine to, A., 511, 759.
 in Hungary in relation to iodine in drinking water, A., 511.
 iodine in Latvian water in relation to, A., 331.
 in albino rats, A., 253.
 endemic, in Hungary in relation to lack of iodine, A., 114.
 exophthalmic, cause of, A., 1446.
 effect of iodine in, A., 1446.
- Gold, extraction of, and recovery of cyanides, (P.), B., 803.
 separation of, from crude antimony and its ores, (P.), B., 639, 813.
 spectrum of, A., 276, 1103.
 refractive index and absorption coefficient of, A., 1346.
 photo-electric properties of, A., 889.
 potential of, in hydrazine solutions, A., 449.
 electrodeposition of, A., 178.
 from cyanide solutions, B., 445.
 electroplating with, in cyanide baths, B., 979.
 cathode sputtering and deposition of, A., 329.
 absorption of, in tube mills, B., 299.
 crystal structure of, A., 60.
 solubility of, in mercury, A., 794.
 production of solutions of, for gilding, (P.), B., 112.
 and its alloys with silver and with copper, action of nitric and sulphuric acids on, A., 1253.
 removal of, from mercury, A., 321.
 films, photo-electric properties of, A., 1106.
 alluvial, reappearance of, in exploited layers, A., 459.
 colloidal, production of, by Zsigmondy's method, A., 303.
 charge and stability of, A., 682.
 magnetism of, A., 1231.
 coagulation of, A., 682.
 effect of alkali salts on cataphoresis and precipitation of, A., 429.
 action of immiscible organic liquids on, A., 906.
 action of gum arabic on, A., 561.
 action of proteins on, A., 1009.
 deposition of, in the organism, A., 387.
 sols, preparation of, A., 164, 906.
 preparation and standardisation of, A., 906.
 rate of formation of, A., 164.
 effect of stirring on rate of coagulation of, A., 563.
 ageing of, A., 682.
 determination of p_H in, A., 562.
 fine, production of, from Hollinger precipitate, B., 543.
 sputtered, crystal structure of, A., 548.
 Western Australian, dip-sampling of, B., 809.
- Gold alloys for jewellery, (P.), B., 813.
 with antimony, X-ray structure of, A., 1223.
 with bismuth, superconductivity of, A., 1224.
 with copper, A., 1118, 1364.
 structure of, A., 414.
 formation and structure of, A., 1224.
 elastic modulus for, A., 900.
 with lead, potential of, A., 435.
 with nickel, electrical conductivity of, A., 1224.
 with silver, potential of, A., 1371.
 with tin, X-ray structure of, A., 1223.
- Gold hydride, solid, A., 1380.
 phosphides, A., 1128.
- Gold organic compounds, A., 78, 838, 1043, 1172, 1316.
 with succinimide, for therapeutic use, (P.), B., 319.
- Gold aminopyridine, dipyrindodibromo-, di-2-pyridylamine, pyridine, and quinoline bromides, A., 1316.
 diisocamyl, dibutyl, diethyl, dipropyl, and mono- and di-benzylcyclohexyl and - β -phenylethyl salts, A., 1043.
 diphenyl, hydroxycarbomethoxyphenyl, nitroanisylphenyl and tolyl dichlorides, A., 1172.
 ethylenediamine-di-*n*-butyl and -di-*n*-propyl bromides and diethylenediamine tribromide, A., 1316.
- Auric *o*-anisyl sulphide, A., 839.
- Gold detection :—
 detection of, with dimethylaminobenzylidenerhodanine, A., 590.
- Gold bars, determination of silver in, B., 1056.
- Gold ores, production of gold from, (P.), B., 847.
 treatment of, B., 254.
 by the cyanide process, B., 979.
 amalgamation, cyanidation and flotation of, B., 1142.
 development of cyanidation with increasing complexity of, B., 979.
- Gold ores, flotation of, B., 979.
 containing copper, cyanidation of, B., 544.
 refractory, treatment of, (P.), B., 164.
- Gold wire, effect of torsion on length of, B., 763.
- Goldfish, toxicity of rotenone derivatives to, A., 260.
- Goloshes, varnishing of, B., 819.
- Gonads, effect of cortico-adrenal extract on, A., 1096.
- Gonad extracts, oral administration of, A., 1462.
- Gooseberries, effect of potassium salts on, B., 267.
- Gossyparia almi, insecticide for control of, B., 692.
- Gout, biological diagnosis of, A., 645.
 action of atophan and salicylic acid on uric acid excretion in, A., 114.
- Grain, apparatus for drying of, (P.), B., 866.
 treatment of, (P.), B., 317.
 conditioning of, (P.), B., 610.
 immunisation of, (P.), B., 361.
 protection of, from insects during storage, B., 691.
 diseases of, and their control, B., 899.
 seed, immunisation of, (P.), B., 83.
- Gram, Bengal. See *Cicer arietinum*.
 horse. See *Dolichos biflorus*.
- Gram husk, nutritive value of, B., 43.
- Gramineæ, glucosides of, A., 661.
 effect of treatment of seeds of, on tropic stimuli, B., 269.
- Gramophone records, flexible, manufacture of, (P.), B., 533.
- Granite, geochemistry of pegmatites of, A., 707.
 of Dhoon, Isle of Man, A., 1029.
 of Eastern North America, A., 332.
- Granular materials, manufacture of, (P.), B., 279, 371.
 apparatus for classification of, (P.), B., 183*.
 grading and separation of, (P.), B., 616.
 separation of, (P.), B., 570.
 measuring apparatus for, (P.), B., 426.
 apparatus for roasting of, (P.), B., 370.
 mixing of, (P.), B., 371.
- Grapes, and their hybrids, anthocyanins in, A., 536.
 red, colouring matters of, A., 402.
- Grape juice, production of, (P.), B., 273.
 chemistry of, B., 1117.
 enzymic clarification of, B., 1117.
 vitamin content and nutritive value of, A., 269.
- Grapefruit, vitamin-C in, A., 1196.
- Graphite, formation of, in cast iron, B., 886.
 purification of, (P.), B., 189.
 permutoid reactions of, A., 1381.
 resistance of, A., 674.
 rate of combustion of, A., 1016.
- Graphite electrodes. See under Electrodes.
- Graphitic acid, micellar structure of, A., 1124.
- Grass, composition of, at different stages of maturity, B., 1023.
 from fertilised and grazed plots, B., 132.
 food reserves and growth of, B., 558.
 culture of, on acid moorland, B., 457.
 manuring of, for seed production, B., 1022.
 fertilisation of, with liquid manure, B., 820.
 water-supplying power of soils under, B., 989.
 potash demand of, B., 175.
 glucoside from pollen of, A., 1100.
 Bahia, nitrogen in, B., 1067.
 blue, injury of, by insects, B., 940.
 hay and pasture, of N. Dakota, composition of, B., 312.
 pasture, effect of management on composition of, B., 1068.
 mineral content of, after intensive manuring, B., 646.
 during droughts, B., 647.
 influence of intensity of grazing on, B., 646.
 reed, permeability of membranes of, A., 534.
- Grassland, management of, B., 82, 646.
 and digestibility and feeding value of grass therefrom, B., 940.
 manured, rotational grazing of, B., 38.
- Grassveld, phosphorus content of, B., 175.
- Grates with progressive movement of fuel, (P.), B., 48.
 open fire, carbonised fuels in, B., 573.
- Greases, lubricating. See under Lubricating.
 machine, analysis of, B., 400.
 Ramsay, vapour pressure of, A., 295.
 rust-preventing, (P.), B., 1039.
 determination of glycerol in, B., 850.
- Greensand, treatment of, (P.), B., 1093.
 utilisation of, (P.), B., 439.

Grids, bubble-tower, (P.), B., 425.

Grignard reagents, nature of, A., 718.
 use of magnesium-copper alloy in preparation of, A., 719.
 reducing action and constitution of, A., 473.
 photo-voltaic effects in, A., 802.
 distillation of, A., 78.
 catalytic effect of magnesium alcoholates on reaction of, with carbon dioxide, A., 351.
 reaction of, with arsenic trichloride, A., 77.
 influence of acid chlorides on determination of, colorimetrically, A., 373.

Grinding, B., 321.
 of materials, (P.), B., 786.

Grinding apparatus, (P.), B., 48, 140, 570, 615, 952, 993.
 disc, combined with electric heater, (P.), B., 94.
 pan type, (P.), B., 48.

Grinding machines, (P.), B., 2, 182.
 for paints, etc., (P.), B., 129.
 three-roll, B., 227.

Grinding wheels, manufacture of, (P.), B., 806.
 segmental, manufacture of, (P.), B., 3.

Grog, B., 677.

Grog blocks, slag corrosion of, by fused peat ashes, B., 395.
 tests for, B., 396.

Growth, substance inhibiting, A., 528.

Grünerite, optical properties of, A., 594.
 from Pierreferite, France, A., 595.

Guagenin, and its derivatives, A., 491, 1100.

Guaiacol, action of oxalyl chloride on, A., 1411.
 β -chloroallyl ether, A., 952.

Guaiacol, 4-amino-, hydrochloride of, A., 737.

Guaiacol-lignin, and its acetyl derivative, A., 941.

Guaiacolsulphonic acid, potassium salt, determination of, in syrups, B., 44.

Guaiacum bark, sapogenin of, A., 491, 1100.

Guaiacyl auric chloride, thio-, A., 838.

Guaiazulene, selenium and sulphur derivatives, and their salts, A., 1301.

Guaioi, and its derivatives, A., 1301.

Guanidine, action of nitrous acid on, A., 1280, 1403.
 enzymic conversion of, into carbamide, A., 524.
 condensation products of aldehydes and, (P.), B., 593.
 in blood following liver injury, A., 651.
 poisoning. See under Poisoning.
 and its derivatives, toxicity of, A., 764.
 hypoglycæmic action of, A., 872.
 derivatives, structure and hypoglycæmic activity of, A., 516.
 chlorate and perchlorate, A., 339.
 nitrate, preparation of, B., 1085.

Guanidine, nitro-, preparation of, B., 1085.

Guanidinooanthraquinone dyes for acetate silk and wool, (P.), B., 834.

Guanidonium chloride, crystal structure of, A., 550.

Guano, B., 1113.

Guarana, active principle of, A., 1087.
 evaluation of, B., 45.

Guarana paste, B., 945.

Guinea-pigs, effect of anterior pituitary hormone on oxygen utilisation by, A., 1337.
 scorbutic, absorption and retention of calcium and phosphorus by, A., 760.

α -D-Glucose calcium chloride, and its rotation and mutarotation, A., 71.

Gums, A., 535.
 chewing. See Chewing gum.
 kauri, in nitrocellulose lacquer, B., 260.
 mesquite, composition and structure of, A., 67.
 mixed ester, production of, (P.), B., 686.
 pino. See Pine gum.
 plant, A., 1100.
 identification of, B., 649.
 determination of, in cracked spirits, B., 524.

Gum arabic, A., 1231.
 structure of aldobionic acid from, A., 465.
 physical properties of aqueous solutions of, A., 561.
 action of, on colloidal gold and silver, A., 561.

Gum-benzoin, action of proteins on, A., 1009.

Gum-resin, production of, by dry distillation, B., 1080.

Guncotton. See Cellulose nitrate.

Gunpowder, reclamation of solvent from manufacture of, B., 319.

Gut, treatment of, for racquets, (P.), B., 108.
 waterproofing of, (P.), B., 438.

Gutta-percha, X-ray investigation of, B., 74, 643, 985.
 refined, manufacture of, (P.), B., 503.
 reclaiming of, (P.), B., 771.
 production of aqueous emulsions of, (P.), B., 504.
 heat of combustion of, B., 35.
 treatment of, for insulation, (P.), B., 76.
 hydrocarbons, polymorphism of, A., 961.
 elasticity of, A., 1421.
 See also Rubber.

Gynolactose, A., 251, 940.

Gypsum, isomorphism of ardealite with, A., 1359.
 calcination of, (P.), B., 1139.
 catalytic dissociation of, A., 318.
 uses of, in chemical industry, B., 629.
 production of ammonium sulphate from, B., 18.
 cellular product from, (P.), B., 397.
 treatment of, for imitation marble, (P.), B., 159.

Gyrophoric acid, and its derivatives, A., 221.

H.

Hæms, crystalline, isolation of, A., 633.

isoHæmatein, staining power of, A., 975.

Hæmatin, acid-, preparation of standard solutions of, A., 1319.

Hæmatins, combination of, with globin, A., 1175.

Hæmatite, pulverulent, agglomeration of, (P.), B., 980.
 determination of sulphur in, B., 928.

Hæmatochromatosis, brown pigment in, A., 511.

Hæmatoporphyrin, permanent changes in fluorescence of, A., 1212.
 synthetic, A., 240.

Hæmatoxylin, A., 361.

Hæmin, synthesis of, A., 240.
 crystalline forms of, A., 1079.

Hæmins, A., 1075.

Zerevitinov determination with, A., 497.
 effect of, on respiration of red blood-corpuscles, A., 109.

Hæmocuprin, isolation of, A., 753.

Hæmocyanin, determination of molecular weight of, A., 155.

Hæmocyanins, structure of, A., 497, 753.

Hæmoglobin, A., 109.
 effect of diet on formation of, A., 753.
 production of, A., 510, 1323.
 optical activity of, A., 857.
 coagulation of, A., 425.
 and its reversal, A., 972.
 osmotic coefficient of sodium chloride in, A., 753.
 and its derivatives, catalytic activity of, A., 857.
 oxygen capacity of, in splenectomy, A., 1175.
 oxidation of, to methæmoglobin, A., 1175.
 compounds of, with carbon dioxide, A., 972.
 maintenance of, on synthetic diet, A., 247.
 regeneration of, by means of metallised food, A., 858.
 rôle of copper salts in, A., 1319.
 acid denaturation of, A., 1439.
 fission of, by papain, A., 376.
 nitric oxide-, preparation of, A., 1319.
 determination of, manometrically, A., 753.
 in blood. See under Blood.
 in splenectomised dogs, A., 972.

Hæmolysis by bile salts, A., 860.
 influence of lactic acid on, A., 1441.
 quinine and saponin, effect of human and guinea-pig serum on, A., 755.
 saponin, A., 974.

Hæmophilia, A., 1083.

Hafnium dioxide, equilibrium of cerium dioxide with, A., 157.
 sulphate, A., 322.

Hair, X-ray structure of, A., 897.
 structure and properties of keratin from, A., 152.
 mordanting of, for production of felt, (P.), B., 534.
 horse, production of substitute for, (P.), B., 1135.
 artificial, manufacture of, (P.), B., 878.
 human, hysteresis in absorption of water by, A., 1007.
 cystine and cysteine content of, A., 380.

- Halides**, Raman effect for, A., 785.
diamagnetism of, A., 411.
density of, A., 455.
diffusion and conductivity of, A., 1236.
and their complex compounds, molecular size of, A., 1229.
decomposition of, by chromic and sulphuric acid mixtures, A., 690.
acid, molecular compounds of, with hydroxyazo-compounds, A., 613.
inorganic, dipole moments and structure of, A., 999.
energy relations of, A., 1000.
organic, Raman spectra of, A., 545.
reaction of, with piperidine, A., 494.
identification of, as 3:5-dinitrobenzoates, A., 504.
determination of, volumetrically, A., 55.
Haliotis californiensis, pigments of, A., 1081, 1321.
Hall effect, A., 672, 673.
Haloform reaction, A., 1294.
Halogens, spectra and electron configurations of, A., 1.
substitution by, A., 340.
labile nature of, in organic compounds, A., 1074.
reaction of, with ethylene, A., 1374.
quantum mechanics of bimolecular reactions between hydrogen and, A., 1140.
influence of, on combination of hydrogen and oxygen, A., 1244.
reaction of, with organic hydroxy-acids and their salts, A., 802.
alkyl and aryl derivatives, separation of, B., 236.
detection of, colorimetrically, A., 699.
determination of, by Gasparini's method, A., 1257.
by liquid ammonia-sodium process, A., 1393.
in organic compounds, A., 856, 1437; B., 1121.
 ψ -**Halogens**, A., 462, 831, 832, 1150.
Halogen compounds, Raman spectra of, A., 998.
Halogen hydrides, Raman effect in, A., 545.
crystal structure and polymorphism of, A., 414.
velocity of reaction of sodium with, A., 314.
Halogen ions, detection and separation of, with chloramine-*T*, A., 1257.
Halogen organic compounds, refractive power of, A., 1214.
Halogenation, aqueous, mechanism of, A., 717.
Hambergite, crystal structure of, A., 549.
Hanks, chemical treatment and washing of, (P.), B., 155.
Hardness, apparatus for measurement of, (P.), B., 869.
apparatus for testing of, (P.), B., 704.
Brinell ball tests for, B., 1054.
Hardystonite, structure of, A., 550.
Harmine, preparation of, A., 1100.
detection of, A., 635.
Harmol, pharmacology of, A., 871.
Hay, B., 690.
effect of quinine on bacterial flora of infusions of, A., 770.
Indian, nutritive values of, B., 42.
lucerne, effect of curing practice on quality of, B., 741.
effect of sodium chloride on microbial heating of, B., 775.
meadow, feeding value of, B., 741.
Roumanian, composition of, B., 651.
Heart, auricular-ventricular junction of, A., 385.
hypertrophy and atrophy of muscle of, A., 254.
tonics for, A., 360.
hormone of, A., 398.
congestive failure of, A., 645, 977.
permeability of, to potassium and sodium ions, A., 516.
potassium content of, in presence or absence of oedema, A., 511.
frog's, action of alcohols and narcotics on, A., 872.
effect of various ions on, A., 388.
formation of ammonia in, A., 255, 869.
action of magnesium chloride on ventricle of, A., 386.
isolated, metabolism of, A., 116.
Heart block, curative factor for, A., 271.
Heat, absorption machines for production of, (P.), B., 183.
automatic control of, A., 929.
problems in conduction of, B., 825.
mechanism of transmission of, B., 949.
transmission of, to water in pipes, B., 422.
exchange of, between viscous liquids, (P.), B., 423.
transfer of, from solids to liquids, (P.), B., 422.
correlation of convection data in calculations on, B., 1029.
apparatus for recovery of, from waste liquors, (P.), B., 370.
molal capacities for, of strong electrolytes, A., 1011.
measurement of effects of, A., 1236.
Heat, latent, equations for, A., 554.
molecular, critical data for, A., 554.
calculation of, of gases, A., 552.
specific, calculation of, from Raman spectra, A., 1361.
effect of unsaturation on, A., 42.
of binary liquid mixtures, A., 900.
of gases, apparatus for determination of, at high pressures, A., 293.
at high temperatures, A., 1361.
from vapour pressure curves, A., 417.
charts of, A., 156.
of quasi-free electrons, A., 889.
of liquids, A., 1363.
of organic liquids, A., 1003.
of metals, effect of drawing on, A., 155.
of solid and liquid metals at high temperatures, A., 293.
of solids at liquid helium temperatures, A., 792.
of saturated vapour at the b. p., A., 1362.
Heat accumulators, (P.), B., 746, 865, 866.
Heat capacity, measurement of, A., 1362.
Heat exchange apparatus, (P.), B., 422, 423.
Heat exchangers, (P.), B., 94, 141, 182, 278, 517, 569, 657, 746, 786, 788, 790, 825, 909, 910, 951, 1029, 1077.
fin tubing for, (P.), B., 827.
for fluids, (P.), B., 1.
for liquids, (P.), B., 826.
in furnaces, checker work for, (P.), B., 372.
steam-heated, (P.), B., 370.
tubular, (P.), B., 1, 278, 569.
for heating of gases, (P.), B., 1125.
Heat flow, linear, evaluation of series and integrals in, A., 1368.
Heat of adsorption of gases on zinc oxide, A., 559.
of organic vapours by charcoal, A., 558.
first, anomalous, A., 1228.
determination of, by coherer method, A., 1228.
Heat of combustion of heterocyclic compounds, A., 568.
Heat of condensation, utilisation of, for heating of materials, (P.), B., 785.
Heat of dilution and thermal expansion, A., 913.
and vapour pressure, A., 433, 566.
and viscosity in aqueous solutions, A., 913.
of alkaline-earth halides, A., 310.
of strong electrolytes, equation for, A., 685.
differential, as electrothermal effect, A., 1236.
Heat of dissociation, calculation of, from conductivity, A., 899.
of hydroxyl and imino-radicals, A., 1209.
of salt vapours, A., 553.
Heat of distillation, A., 169.
Heat of formation and atomic number, A., 1370.
Heat of fusion of hydrocarbons, A., 1362, 1363.
latent, A., 1221, 1361.
Heat of neutralisation, A., 1011.
Heat of vaporisation, B., 227.
prediction of, A., 675.
of aliphatic alcohols, A., 553.
of liquids, A., 155.
of organic compounds, A., 1222.
Heat of wetting of gases, A., 559.
Heat regenerators, alternating, theory of, B., 181.
Heat transmission apparatus, (P.), B., 278.
Heaters, transmission and regulation of heat to, (P.), B., 321.
Heating, device for, (P.), B., 48.
utilisation of metallic vapours for, (P.), B., 93.
with hot water at high pressures, B., 865.
of liquids in wooden vessels, B., 277.
of decomposable liquids, (P.), B., 277.
of materials, with utilisation of heat of condensation, (P.), B., 785.
Heating apparatus, (P.), B., 517, 866, 951.
for liquids, (P.), B., 277, 702.
electric, applications of, in chemical industry, B., 640.
oil-fired, for melting pans, etc., (P.), B., 616.
Heavy spar, refining of, (P.), B., 588.
Hebin, A., 1337.
Hederabetulin, dihydro-derivative, A., 1159.
Hederagenin, and its derivatives, A., 1159.
Heifers, dairy, calcium requirements of, A., 1086.
Hektographic materials, (P.), B., 583.
Helianthrones, dihydroxy-, and tetrahydroxy-, and their derivatives, A., 356.

- Helianthus annuus*. See Sunflowers.
Helianthus tuberosus, formation of polylavans in, A., 1100.
Heliothis obsoleta. See Cotton boll worm.
Helium, A., 327, 1258.
 as basis for atomic weights, A., 15.
 atoms, polarisability of, A., 14.
 excited, life-period and diffusion coefficient of, A., 4.
 properties and uses of, B., 110.
 spectrum of, A., 10, 539, 1343.
 intensity variation of lines in, A., 887.
 Stark effect in, A., 136.
 produced by condensed discharge, A., 779.
 effect of electric and magnetic fields on, A., 663.
 excitation of singlet and triplet states of, A., 403.
 arc spectrum of, A., 663, 992.
 band spectrum of, in stellar spectra, A., 5.
 perturbations in, A., 1203.
 Zeeman effect in, A., 1343.
 ultra-violet spectrum of, A., 663.
 spectrum of mixtures of oxygen and, A., 1.
 resonance atomic line of, A., 1203.
 influence of hydrogen on sparking potential of, A., 275.
 high-frequency discharges in, A., 276.
 high-frequency and direct-current discharges in, A., 403.
 scattering of α -particles by, A., 280.
 scattering of X-rays by, A., 1105.
 ionisation of, A., 1105.
 by alkali ions, A., 542.
 by electron impact, A., 10.
 ionised, life of, A., 1349.
 intensity in spectrum of, A., 779.
 multiply charged ions in, A., 10.
 excitation probabilities of electrons in, A., 1206.
 capture and loss of electrons by ions in, A., 1347.
 capture of electrons from mercury atoms by positive ions of, A., 665.
 accommodation coefficients of positive ions of, A., 992.
 electron impact in, A., 1107.
 formation of hydrogen by splitting of ions of, A., 14.
 passage of protons through, A., 407.
 dielectric constant of, A., 23.
 compressibility isotherms of, A., 793.
 determination of latent heat of fusion and density of, A., 1221.
 liquid, allotropy of, A., 416.
 modifications of, under pressure, A., 1004.
 measurements with, A., 156, 292.
 leakage of, through pyrex glass, A., 929.
 equation of state of, A., 675.
 van der Waals' forces for, at large inter-atomic distances, A., 282.
 velocity of sound in, at liquid helium temperatures, A., 792.
 ignition of mixtures of methane and, A., 1240.
 ortho- and para-, calculation of S terms, A., 4.
 separation and higher quantum numbers of, A., 143.
Helium determination :—
 determination of, in mixtures with neon, A., 452.
Helleborus, pharmacology of alkaloids of, A., 517.
Helvine, structure of, A., 289.
Hemicelluloses, A., 884, 1198.
 in brewers' grains, B., 903.
 in plant cells, A., 776.
 decomposition of, by micro-organisms, A., 1192.
 determination of, B., 625.
Hemimellitic acid, physical and crystallographic properties of, A., 290, 1360.
Hemlock, water, A., 1342.
Hens, relation between ova development, blood-calcium, and antirachitic factor in, A., 384.
 hypervitaminosis in, A., 399.
 influence of cod-liver oil and ultra-violet light on egg production of, A., 1465.
 laying, effect of vitamin- D supplements on, A., 399.
Heneicosanedicarboxylic acid, degradation of, and its ethyl hydrogen ester, A., 76.
Heparin, effect of, on serum-enzymes and on hæmolysis, A., 1441.
Hepta-acetyl-4-glucosidomethylmannosides, and their structure, A., 201.
5-O-Hepta-acetyl- β -lactosidoxy-7:3:5'-trimethoxyflavylium chloride, 3:4'-dihydroxy-, and its diacetyl derivative, A., 1426.
2-O-Hepta-acetyl- β -lactosidyl-4-O-methylphloroglucinaldehyde, A., 1426.
n-Heptacontane, A., 193.
Heptadecic acid, isolation of, from lumbang oil, A., 935.
Heptadecylamine, and its derivatives, A., 77.
2-n-Heptadecylbenzimidazole, A., 601.
4 α -Heptadiene, and its tetrabromide, A., 709.
Heptaldoxime, preparation of, A., 825.
Heptamethylaldobionic acid, methyl ester, A., 465.
Heptamethyleneimine, syntheses of, and its salts, A., 75.
Heptamethyl-4- β -galactosido- α -methylmannoside, A., 940.
Heptamethyl-4- β -glucosido- α -methylmannoside, A., 939.
Heptamethyl-1- β -methyl-6- α -glucosidoglucose, A., 1040.
Heptane, $\beta\delta$ -dibromo-, A., 945.
 $\alpha\beta\gamma$ -tetrabromo-, A., 1147.
l-Heptane, γ -bromo-, A., 821.
Heptane- $\omega\omega'$ -diamidine dihydrochloride, A., 1043.
spiroHeptanedicarboxylic acid, resolution of, and its salts and dianilide, A., 1054.
Heptan- γ -ol, β -bromo-, A., 945.
cycloHeptanone dinitrophenylhydrazone, A., 937.
Heptathiodiazines, synthesis of, A., 854.
Heptenes, *mono*- and *di*-bromo-, A., 1147.
4 β -Hepten- α -ol, A., 1147.
4 α -Heptinene, triacetoxymercuri-derivative, A., 65.
Heptoic acid, vapour, heat of association of, A., 42.
isoHeptoic acid, *p*-bromophenacyl ester, A., 621.
Heptyl alcohol, *n*-chloro-, and its phenylurethane, A., 1033.
Heptyl peroxide, dihydroxy-, A., 604.
 hydrogen peroxide, α -hydroxy-, A., 1268.
n-Heptylamine, preparation of, A., 829.
p-Heptylanisole, A., 1434.
2-n-Heptylbenzimidazole, A., 601.
4-Heptylphenol, 2-amino-, and its acetyl derivative, 2-nitro-, and 5-nitro-2-amino-, A., 1434.
n-Heptylphenols, and their derivatives, A., 224.
o-n-Heptylphenoxyacetic acid, A., 224.
 α -Heptylpimelic acid, A., 67.
 α -Heptylpimelic acid, A., 67.
Heptylresorcinol, absorption and excretion of, A., 1452.
Heracleum lanatum, constituents of, A., 536.
Herb bennet. See *Geum urbanum*.
Heroin, detection of, by Denigès-Oliver test, A., 1312.
Herpes, virus of, and its inactivation, A., 1461.
Hesperidin, structure of, and its acetyl derivative, A., 1040.
Heteroalbuminicholia, A., 1179.
Heteroazeotropic mixtures, A., 1365.
Heterocyclic compounds, A., 631, 632.
 unsaturation and tautomeric mobility of, A., 969.
 heats of combustion of, A., 568.
Heteropolycyclic compounds, A., 1382.
Heteropolymerisation, additive, A., 198.
Heulandite, A., 595.
 X-ray analysis of dehydration of, A., 163.
Hevea, effect of fungicides on buds of, B., 734.
 identification of clones of, B., 1020.
Hevea brasiliensis, oil from seeds of, B., 70.
Hexa-acetylanhydrochitobionolactone, A., 1402.
Hexa-acetyl-2-deoxycellobiose, A., 200.
Hexatert-alkylethinyethanes, stability of, A., 1392.
Hexa-ammino-salts, structure of, A., 1215.
Hexa-amylose, A., 1276, 1277.
Hexa-aquo-salts, structure of, A., 1215.
Hexa- ω -tert-butylpropinyethane, A., 194.
n-Hexacontane, A., 193.
Hexadecahydropyrenes, A., 1280.
Hexadecyl alcohol, equilibrium of, with octadecyl alcohol, A., 684.
Hexadecyl iodide, compound of, with octadecyl iodide, A., 911.
Hexadialenal, and its derivatives, A., 1273.
cycloHexadiene, oxidation of, and its 1:2:4:5-dioxide, A., 945.
Hexafluorophosphates. See under Phosphorus.
cis-Hexahydrindylidene-2-acetic acid, A., 729.
Hexahydroanthraquinol, 1-hydroxy-, *O*-diacetyl derivative, A., 845.
Hexahydrodianhydrostrophanthidins, and their derivatives, A., 1276.
trans-2:3:4:5:11:12-Hexahydroheptindole, and its picrate, A., 1166.
Hexahydrohydrindenes, A., 728.
cis- and trans-Hexahydrohydrindene-2-acetic acids, 2-hydroxy-, and their derivatives, A., 729.

- trans*-Hexahydrohydrindene-2-cyanoacetic acid, and its derivatives, A., 729.
- trans*-Hexahydrohydrindene-2:2-dicyanoacetic acid, and its derivatives, A., 728.
- Hexahydrohydrindene-2:2-diacetic acids, and α -cyano- α' -dibromo-, α -bromo- α' -hydroxy-, and *mono*- and *di*-hydroxy-, and their derivatives, A., 728, 729.
- Hexahydrohydrindene-2:2-dimalonic acids, derivatives of, A., 729.
- trans*-Hexahydrohydrindene-2-formic acid, 2-hydroxy-, A., 729.
- Hexahydro-2-hydrindones, derivatives of, A., 729.
- r-trans*-Hexahydrohydrindyl-2-acetic acid, and its derivatives, A., 729.
- r-trans*-Hexahydrohydrindyl-2-cyanoacetic acid, derivatives of, A., 729.
- Hexahydrohydrindylidene-2-acetamides, α -cyano-, A., 729.
- trans*-Hexahydrohydrindylidene-2-acetic acid, and its dibromide, A., 729.
- trans*-Hexahydrohydrindylidene-2-acetone, and its semicarbazone, A., 728.
- Hexahydrohydrindylidene-2-cyanoacetic acids, and their ethyl esters, A., 729.
- trans*-Hexahydrohydrindylidenehexahydro-2-hydrindone, and its semicarbazone, A., 729.
- Hexahydrohydrindylidene-2-propionitriles, A., 729.
- r-trans*-Hexahydrohydrindyl-2-malonic acid, and its derivatives, A., 729.
- Hexahydroindenyl-2-acetic acids, and their derivatives, A., 729.
- Hexahydroindenyl-2-acetonitriles, A., 729.
- Hexahydroindenyl-2-propionic acids, ethyl esters, A., 729.
- Hexahydromethylmangostin, derivatives of, A., 960.
- 5:6:7:8:9:10-Hexahydronaphthalene, 1:3-di-hydroxy-, A., 1428.
- 1:4:5:8-diendoxo-1:4:5:8:9:10-Hexahydronaphthalene-9:10-dicarboxylic acid, and its methyl ester, A., 1426.
- Hexahydro-oxidodianhydrostrophanthidins, ethyls of, A., 1276.
- Hexahydro-*o*-phenylenediacetdianilides, A., 495.
- Hexahydrophthalamic acids, methyl esters, A., 1291.
- Hexahydrophthalanic acids, A., 1291.
- 3:6-endoxo-Hexahydrophthalic acid, 4-bromo-5-hydroxy-, and its derivatives, A., 1426.
- 3:6-endoxo-Hexahydrophthalic acids, methyl esters, A., 1427.
- 3':4':5':3':4':5'-Hexamethoxydiflavone, A., 1305.
- 5:6:7:3':4':5'-Hexamethoxy-3-phenylcoumarin, A., 963.
- Hexamethyltriaminotrinaphthylmethane, A., 350.
- 2:2':4:4':6:6'-Hexamethyldicyclohexyl, A., 720.
- Hexamethylene α -diselenocyanate, A., 373.
- cyclo*Hexamethylene 1:8-diselenide, A., 373.
- Hexamethylenediselenic acid, A., 373.
- Hexamethylenetetramine (*urotropine*), manufacture of, (P.), B., 622.
- from methane, (P.), B., 1086.
- equilibrium of, with calcium chloride and water and with magnesium chloride and water, A., 684.
- product of, for intravenous use, (P.), B., 463.
- use of, in determination of metals of the ammonium hydroxide group, A., 1261.
- picrate, A., 966.
- compounds of, with silver and metallic salts, A., 1019.
- determination of, gravimetrically, A., 335.
- in mixtures with hexamethylenetetramine methylene citrate, B., 665.
- in pharmaceutical products, B., 653.
- Hexa-(γ -methyl- γ -ethyl- Δ -pentinyl)ethanes, A., 1392.
- Hexamethyl-6-glycuronide- β -methylgalactoside. See Heptamethylaldobionic acid.
- 1:2:3:4:5:6-Hexamethyl-4- α -methyl- Δ -propenyl- Δ^1 -cyclohexene, A., 819.
- Hexene, Raman effect at critical point of the system methyl alcohol and, A., 145.
- pure, conductivity of, A., 894.
- dielectric constant of, A., 894.
- n*-Hexene, α , β -diamino-, hydrochloride, thermal decomposition of, A., 942.
- $\beta\beta$ -dibromo-, A., 945.
- $\alpha\beta\gamma$ -tetrabromo-, A., 1147.
- l*-Hexene, γ -bromo-, A., 821.
- cyclo*Hexene, structure of, A., 27.
- and its derivatives, molecular structure of, A., 672.
- refractive index of, A., 1214.
- Rayleigh scattering in, A., 787.
- photo-reaction between bromine and, A., 1251.
- cyclo*Hexene, crystal structure of, A., 1219.
- oxidation of, in air, A., 1372.
- in Oklahoma petroleum, B., 1081.
- derivatives, X-ray structure of, A., 1219.
- halogeno-derivatives, reactivity of halogens in, A., 207.
- cyclo*Hexene, 1-aminocyno-, hydrochloride of, and 2-chloro-1-cyano-, A., 1037.
- dibromo-, A., 348.
- α - and β -hexachloro-, dipole moments of, A., 24.
- tetrahydroxy-, and its tetra-acetyl derivatives, A., 945.
- Hexenes, isolation of, from petroleum, B., 187.
- trans-cyclo*Hexanespirocyclobutane-2':4'-dicarboxylic acid, A., 1415.
- cis-cyclo*Hexanespirocyclobutane-2':4'-dicarboxylic anhydride, A., 1415.
- cyclo*Hexanespirocyclobutane-2':2':4':4'-tetracarboxylic acid, A., 1415.
- cyclo*Hexanespirocyclobutanone, preparation of, A., 958.
- cyclo*Hexanecarboxylic acid, 1-amino-, A., 1037.
- cyclo*Hexanespiro-2':4'-dicyanocyclobutane-2':4'-dicarboxylimide, A., 1415.
- Hexane- $\omega\omega'$ -diamidine dihydrochloride, A., 1043.
- cyclo*Hexanespiro-2':4'-dicarbamylcyclobutane-2':4'-dicarboxylic acid, A., 1415.
- cis*- and *trans-cyclo*-Hexane-1:2-dicarboxylic acids, heat of hydration of, A., 42.
- cyclo*Hexanediois, X-ray structure of, A., 1219.
- and their derivatives, A., 347.
- cyclo*Hexane-1:2-dione, and its derivatives, A., 1294.
- cyclo*Hexane-2:3-dione-1:4-dicarboxylic acid, ethyl ester, action of sodium ethoxide on, A., 841.
- cyclo*Hexane-3:5-dione-1(2')-spiro-transhexahydrohydrindene, and its methylene derivative, A., 728.
- Hexane- $\omega\omega'$ -di- β -thiocarbamide dihydrochloride, A., 1043.
- Hexane- $\beta\gamma\delta$ -tetracarboxylic acid, A., 603.
- cyclo*Hexane-1:2:4:5-tetraol hydrate, A., 945.
- cyclo*Hexane-lithiocarboxylic acid, preparation of, and its silver salt and derivatives, A., 219.
- cyclo*Hexanetriol, A., 945.
- cyclo*Hexanol, catalytic reactions of, on active charcoal, A., 1286.
- Hexan- γ -ol- β -dione, and its derivatives, A., 69.
- iso*Hexan-3-ol- β -one, velocity of decomposition of, A., 573.
- catalytic decomposition of, A., 1245.
- cyclo*Hexanol-2-sulphonic acid, and its salts, A., 1286.
- Hexan- ϵ -one, $\alpha\beta$ -dihydroxy-, and its derivatives, A., 68.
- cyclo*Hexanone, condensation products of, with resorcinol and pyrogallol and their derivatives, A., 627.
- peroxide, A., 1057.
- 4-*p*-tolylthiosemicarbazone, A., 486.
- cyclo*Hexanones, orientation amongst, A., 1417.
- cyclo*Hexanonebenzil, and its derivatives, A., 845.
- cyclo*Hexanonephenylcyclohexylthiosemicarbazone, A., 1285.
- 4:5-*cyclo*Hexano-oxazoline, 2-amino-, and its salts, and 2-di-bromoamino-, A., 832.
- Hexaphenylbenzene, A., 207.
- Hexaphenylethane, sulphur analogues of, A., 1419.
- $\alpha\alpha\beta\epsilon\zeta\zeta$ -Hexaphenyl- $\Delta\epsilon$ -hexadiene, A., 948.
- $\alpha\alpha\alpha\zeta\zeta$ -Hexaphenyl- γ -methyl- $\Delta\gamma$ -hexene, A., 1044.
- Hexene, photochemical reaction of gaseous iodine with, A., 282.
- cyclo*Hexene, Rayleigh scattering in, A., 787.
- oxidation of, in air, A., 1372.
- autoxidation of, A., 609.
- condensation of, with benzyl alcohol, in presence of phosphorus pentoxide, A., 349.
- sulphonation of, A., 1286.
- Friedel-Crafts reaction with, A., 1412.
- Hexenes, *mono*- and *di*-bromo-, A., 1147.
- cyclo*Hexene oxide, action of, with alkali and ammonium halides, A., 1132.
- with ethyl aminoacetate, A., 1154.
- $\Delta\beta$ -Hexen- α -ol, and its naphthylurethane, A., 1147.
- Hexogen, stability of pentaerythritol nitrate and, B., 1123.
- Hexoic acid, formation of, from ethyl *n*-butylacetoacetate, A., 197.
- synthesis of, from pentane, B., 833.
- extraction of, from aqueous solution with light petroleum, A., 1270.
- glyceryl ester, A., 1269.
- determination of, in edible fats, B., 1017.
- Hexoic acid, ϵ -amino-, polymeric amide from, A., 205.
- γ -amino-, and its salts and benzoyl derivative, A., 943.
- $\alpha\beta$ -dicyano-, ethyl ester, A., 1417.

- iso*Hexoic acid, *p*-bromophenacyl ester, A., 621.
n-Hexolactone hydrochlorides, α -amino- $\delta\epsilon$ -dihydroxy-, A., 1402.
n-Hexonitrile, ϵ -bromo-, A., 1160.
Hexonyldihydroxyhexanone, dihydroxy-, and its diacetyl derivative, A., 68.
Hexoses, oxygen absorption by fission products of, A., 1273.
energy available for fermentation of, by micro-organisms, A., 875.
determination of, in hydrolytic products of polysaccharides, A., 1038.
Hexosediphosphates, effect of iodoacetate on fermentation of, A., 985.
Hexosediphosphoric acid, oxidation of, by enzyme from animal tissues, A., 1189.
Hexosephosphates, A., 63, 933, 1148.
Hexosephosphoric acid, esters, A., 523.
methylation of, A., 600.
in ossification, A., 258.
*iso*Hexoyl-*o*- and -*p*-aminobenzoic acids, α -bromo- and α -hydroxy-, A., 124.
*iso*Hexoyl-*l*-asparagines, α -bromo-, physiological action of, A., 764.
n-Hexoylcholine chloroplatinate, A., 943.
*iso*Hexoylglucosamine, α -bromo-, tetrabenzoyl derivative, A., 470.
N-*iso*Hexoylglucyl-*m*-carboxybenzenesulphonamide, *dl*- α -bromo-, A., 124.
*iso*Hexoylglucyl-*p*-toluenesulphonamide, *N*- α -bromo-, A., 124.
dl-*iso*Hexoyl-*l*-histidine, α -bromo-, and its methyl ester, A., 1191.
n-Hexoylmethylamines, A., 229.
dl-*iso*Hexoyl-*dl*-phenyl- β -alanine, α -bromo-, A., 768.
dl-*iso*Hexoyltyrosines, α -bromo-, A., 768.
*iso*Hexoyl-*dl*-valine, *dl*- α -bromo-, racemates of, A., 125.
Hexuronic acid, function of, in cabbage leaves, A., 533.
*cyclo*Hexyl silicates, A., 1021.
sulphite, A., 463, 819.
*cyclo*Hexylamine, 2-iodo-, hydrochloride, A., 832.
*cyclo*Hexylamines, manufacture of condensation products of, with halogenated nitro-compounds, (P.), B., 334.
1-*n*-Hexylaminobenzthiazole, and its hydrohexabromide, A., 969.
*cyclo*Hexyl(β -amyl-*n*-nonyl)amine, and its salts, A., 343.
*cyclo*Hexylcarbamic acid, 2-iodo-, esters of, A., 832.
*cyclo*Hexylcarbamide, 2-iodo-, A., 831.
*cyclo*Hexylcarbimide, 2-iodo-, A., 831.
*cyclo*Hexylcarbithioic acid. See *cyclo*Hexanedithiocarboxylic acid.
Hexylcellobiosides, heptaacetates of, A., 73.
 α -*n*-Hexylcinnamaldehyde, and its semicarbazone, A., 485.
 β -*cyclo*Hexyl- α -dimethylbutyric acid, and its lactone, A., 1270.
 d - α -*cyclo*Hexylethyl alcohol, A., 85.
*cyclo*Hexylethylamine picrate, A., 343.
*cyclo*Hexyl-(β -ethyl-*n*-hexyl)amine, and its salts, A., 343.
*cyclo*Hexylfurylamine, and its phenylurethane, A., 343.
*cyclo*Hexyl-(γ -furyl- β -methylpropenyl)amine, and its hydrochloride, A., 343.
*cyclo*Hexylglycine, 2-hydroxy-, and its diketopiperazine derivative, A., 1154.
*cyclo*Hexyl-*n*-heptylamine, and its hydrochloride, A., 343.
 β -*cyclo*Hexyl- δ -hexolactones, A., 1271.
*cyclo*Hexyl-(γ -hydroxy- $\beta\beta$ -dimethylpropyl)amine, and its derivatives, A., 343.
*cyclo*Hexyl-(β -methyl-*n*-amyl)amine, and its derivatives, A., 342.
*cyclo*Hexyl-(β -methylbutyl)amine, and its derivatives, A., 343.
*cyclo*Hexyl-(ϵ -methyl- β -isopropyl-*n*-hexyl)amine, and its salts, A., 343.
2-*cyclo*Hexylmethylquinoline picrate, A., 1167.
n-Hexyl- α -naphthol-orange, A., 344.
*cyclo*Hexylcyclopentane, A., 339.
*cyclo*Hexylcyclopentylmethane, A., 339.
p-*cyclo*Hexylphenol, 3:5-dinitrobenzoyl derivative, A., 837.
n-Hexylphenols, and their derivatives, A., 224.
*cyclo*Hexylphenols, mercury derivatives of, A., 1078.
 o -*n*-Hexylphenoxyacetic acid, A., 224.
*cyclo*Hexyl-(ϵ -phenyl- β -benzyl-*n*-amyl)amine, and its salts, A., 343.
*cyclo*Hexyl-(γ -phenyl- β -methylpropyl)amine, and its derivatives, A., 343.
 d - α -*cyclo*Hexyl-*n*-propyl alcohol, A., 85.
Hexylresorcinol, absorption and excretion of, A., 1452.
determination of, in biological material, A., 1452.
*cyclo*Hexylsulphinic acid hydrate, A., 64.
n-Hexylsulphone, A., 1409.
*cyclo*Hexylsulphonic acid, and its derivatives, A., 64.
p-*n*-Hexylsulphonylphenylhydrazine, A., 1409.
*cyclo*Hexylthiosulphonic acid, *cyclo*hexyl ester, A., 64.
Hibiscus fibres from India and Iraq, B., 106.
Hides, drying and cleaning of, (P.), B., 266.
measurement of swelling of, B., 35.
soaking of, (P.), B., 359.
ammonia in lime liquors from treatment of, B., 408.
bating of, (P.), B., 645.
enzyme lime liquors for, B., 732.
depilation of, (P.), B., 1021.
unhairing of, (P.), B., 772.
with micro-organisms, (P.), B., 855.
preparation of, for vegetable tanning, (P.), B., 600.
analysis of salts used in curing of, B., 771.
dried, infected with anthrax, sterilisation of, B., 129.
raw, defects in, and their effect on leather, B., 408, 505*.
effect of cold on, B., 554.
curing of, B., 938.
salted, bacteriology of red stains on, B., 504.
Hide powder, effect of acids on, B., 1109.
physico-chemical differences according to sex in, B., 504, 771.
official, control of *pH* value of, B., 130.
standardisation of, B., 130.
Hillebrandite, X-ray analysis of, A., 310.
Hippuric acid, azlactones from *o*-nitrobenzaldehyde and 6-nitropiperonal and, A., 743.
Hippuric acid, *p*-chloro-, A., 1327.
Hippuro- β -phenylethylamide, A., 365.
Hippuro- β -veratrylethylamide, A., 365.
Histamine, production of, by bacilli, A., 264.
influence of colloids on action of, A., 517.
in blood, A., 1440.
electrolytes in blood during shock from, A., 1328.
motor reactions of the small intestine to, A., 388.
effect of, on gastric acidity and urinary reactions, A., 517.
compound resembling, from histidine, A., 1328.
picrate, crystal structure of, A., 551.
Histidine, effect of irradiation of, A., 694.
as hematogenic amino-acid, A., 109.
anabolic action of, A., 385.
enzymic degradation of, A., 874.
fate of, in the organism, A., 1326.
metabolism of. See under Metabolism.
precipitation of, from proteins, A., 1317.
l-Histidine, 2-thiol-, synthesis of, and its salts, A., 238.
l-Histidyl-*l*-histidine, A., 1191.
Histochematins, absorption spectra of, A., 860, 1177.
Histology, X-ray, A., 26.
Histone methyl ester hydrochloride, A., 1317.
Hofker's fluid as fixative in block staining, A., 755.
Hog cholera, manufacture of vaccine for, (P.), B., 782.
Holmium, spectra of, A., 780.
furnace spectrum of, A., 7.
 β -Homocamphor, synthesis of, and its derivatives, A., 626.
Homocamphor, β -hydroxy-, and its diethylacetal, A., 1068.
Homochelidonine, constitution of, A., 854.
Homochromanone, and its semicarbazone, A., 493.
Homopathic triturates, luminescence analysis of, B., 318.
Homogentisic acid, determination of, iodometrically, in urine, A., 113.
Homomesitones, A., 1274.
Homomesityl oxide, constitution of, A., 467.
Homophthalimide, production of azo-dyes from, B., 965.
and its *n*-aryl derivatives, azomethines of, A., 1414.
N-Homoveratryl- β -*n*-bromophenylethylamine, 2-nitro-, A., 1077.
Honey, B., 992.
ultra-violet absorption of, B., 414.
photoactivity of, B., 220.
effect of storage temperature on, B., 992.
crystallisation of, B., 992.
yeast in fermentation of, B., 1120.
catalase in, A., 1188.
colloids in, and their removal, B., 462.
diastase in, B., 43, 740.
behaviour of diastase on heating of, B., 513.
organic acids in, B., 462.
evaluation of, B., 564, 609.
American, diastatic activity of, B., 315.
artificial, diastase test for honey in, B., 858.

- Honey**, bitter, from Sardinia, B., 1071.
foreign, analyses of, B., 652.
"honeydew," apparent sucrose content of, B., 651.
natural and artificial, distinction between, B., 780.
pollen analysis of, B., 1071.
determination of dextrose and levulose in, B., 1115.
determination of moisture in, B., 992.
- Honey-dew**, effect of melezitose in, for bees, A., 1327.
- Hookworm** in dogs, effect of diet on, A., 1083.
- Hops**, drying of, B., 562.
preservation of, (P.), B., 778, 1116.
solution and precipitation of humulone of, during wort boiling, B., 607.
pharmacology of, A., 1088.
analysis of, B., 85, 941.
determination of bitter principles of, B., 902.
determination of preservative value of, colorimetrically, B., 902.
- Hormones**, manufacture of preparations of, (P.), B., 46, 366, 947, 1122.
manufacture of active preparations of, (P.), B., 223.
effect of, on colloidal osmotic pressure, A., 879.
on lactic acid and sugar in, A., 1462.
metabolic experiments on rabbits with preparations of, A., 1084.
of intestinal mucous membrane, A., 1461.
adrenal cortical, A., 1095.
anti-cancer hypothetical, A., 1180.
circulatory, A., 397.
cortico-adrenal, A., 879, 987.
corpus luteum and follicular, antagonism between, A., 987.
crystalline follicular, A., 1337.
female sexual, A., 269, 878, 1195.
in cerebrospinal fluid, A., 987.
female and male sexual, concomitance of, A., 1097.
follicular, A., 771.
gastric absorption of, A., 269.
insular, A., 397.
male sexual, A., 269, 397, 528.
purification of, by vacuum distillation, A., 658.
separation of, from menformone, A., 527.
assay of, in testicular preparations, A., 1462.
standardisation of, A., 658.
- oestrus-producing**, A., 1462.
- ovarian**, A., 987.
action of, on plants, A., 1337.
distribution of, in the organism, A., 369.
effect of, on metabolism, A., 1337.
determination of, colorimetrically, A., 1195.
- ovary-stimulating**, A., 398.
- pancreatic**, A., 128.
causing reduced blood-pressure, A., 658.
- parathyroid**, A., 127.
effect of, on calcium metabolism, A., 528.
on magnesium content of blood, A., 528.
on tissue-phosphatases, A., 129.
influence of vitamin-D and, on calcium economy, A., 987.
- pituitary**, manufacture of, (P.), B., 743.
growth-promoting, A., 268.
- anterior pituitary**, A., 269, 527, 771, 1462.
inactivation of, by proteolytic enzymes, A., 987.
action of, on oxygen utilisation by guinea-pigs, A., 1337.
effect of, on the uterus, A., 1461.
- sexual**, manufacture of, (P.), B., 947.
purification of, (P.), B., 515.
action of, on gas-exchange, A., 1097.
antagonistic, separation of, in pituitary extracts, A., 878.
determination of, A., 878.
testicular, assay of, by the comb growth reaction, A., 127.
thyroid, in blood in pregnancy, A., 1337.
assay of, A., 1463.
- Horn**, artificial, manufacture of, (P.), B., 266.
- Hornblende**, effect of heating of, A., 818.
brown, from Taiwan, A., 1390.
- Horses**, feeding of, with hay and straw, B., 861.
replacement of oats in rations for, by spent wash from potato-spirit distillery, B., 741.
- Horse-chestnuts**, saponin of, A., 1159.
- Hosiery**, removal of stains from, B., 1046.
dyeing of. See under Dyeing.
- House-fly**, control of, with sodium fluosilicate or borax, B., 700.
- Humic acid**, A., 335.
preparation and purification of, B., 97.
Cassel, oxidation of, B., 229.
from lignite, methylation of, B., 372.
determination of, in dilute solutions, by potassium permanganate, A., 1149.
- Humic acids**, A., 460.
constitution of, A., 1149.
isolation of, B., 185.
methyl glycol derivatives of, B., 833.
- Humidification** of air, A., 816.
- Humidity**, measurement of, (P.), B., 3.
resistance thermometers for, B., 981.
production of desired amount of, A., 1264.
control of, A., 1144.
in storage chambers, B., 613.
regulation of, A., 929.
- Humins**, constitution of, A., 1149.
- Humus**, origin of, A., 596.
formation and decomposition of, in stable manure and soil, B., 509.
bacterial decomposition of, in soils, B., 1149.
layers of, in forests of the United States, A., 1146.
determination of, photometrically, B., 939.
- Hyacinth**, essential oil from flowers of, B., 863.
water, gasification of, B., 748.
- Hydantoin**, condensation of, with *o*-nitrobenzaldehyde, A., 366.
Hydantoin, thio-, dyes from, A., 495, 1170.
- Hydantoins**, and thio-, absorption spectra of, and 2-thio-, 5-furfurylidene derivative, A., 367.
disubstituted, A., 631.
- Hydantoin-3-acetic acid**, rupture of, to form carbamidodiacetic acid, A., 631.
derivatives of, and their use in the identification of alcohols and amines, A., 966.
- Hydnocarpus dawnensis* and *verrucosa*, chaulmoogra oils from, B., 552.
- Hydrangenol**, constitution of, A., 960.
- Hydrargillite** from Istria, A., 332.
- Hydrargyrum cum Creta**, preparation and composition of, B., 365.
excretion of mercury after ingestion of, A., 518.
- Hydrargyrum salicylicum**, preparation, composition, and analysis of, B., 904.
- Hydrastine**, *N*-hydroxy-, and its derivatives, A., 969.
Hydrastine, synthesis of, A., 499.
N-oxide, formation of dialkylhydroxylamine from, A., 969.
- Hydrastines**, and amino-, chloro-, and iodo-, and their salts and derivatives, A., 499.
- Hydrastis canadensis*, B., 697.
- Hydrates**, A., 1020, 1021.
Kossel-Magnus theory and structure of, A., 287.
infra-red absorption spectra of, A., 1352.
surface chemistry of, A., 679.
organic crystal, relative hydration of, A., 708.
- Hydraulic machines**, liquids for, (P.), B., 795.
- Hydrazides**, substituted, preparation of, A., 209.
- Hydrazine**, formation of, in electrical and photochemical decomposition of ammonia, A., 1250.
ultra-violet absorption spectrum and Raman effect for, A., 787, 891.
liquid, Raman effect for, A., 997.
hydrate, reaction of, with ω -bromoacetophenone, A., 1169.
sulphate, action of oxidising agents on, A., 1254.
determination of iron by, A., 1261.
use of, in electrometric titrations, A., 449.
determination of, by oxidation, A., 925.
- Hydrazinohydrastine- α** , A., 499.
- β -Hydrazinopropaldehyde diethyl acetal**, and its hydrogen oxalate, A., 937.
- 3-Hydrazinopyridine**, and its derivatives, A., 740.
- Hydrazobenzenes**, di- and tetra-chloro-, A., 1283.
- Hydrazones**, formation of, from diazo-compounds, A., 211.
isomerism of, A., 1046.
basic properties of, A., 957.
condensation of, with aldehydes, A., 222, 957, 1416.
stereoisomeric, molecular compounds of, A., 1046.
chloro-substituted, action of chlorine on, A., 1156.
- Hydrazonium compounds**, inter- and intra-molecular reactivity of, A., 937.

- Hydrazodithiocarbamides**, isomeric, A., 369.
- Hydrides**, crystal structure of, A., 414.
of the oxygen group, absorption spectra and optical dissociation of, A., 1109.
diatomic, electronic structure of, A., 2.
gaseous, oscillating discharges for formation of, A., 177.
- Hydrindene**, 5-hydroxy-, substitution derivatives of, and 6-amino- and 6-bromo-5-hydroxy-, and 5:6-di-hydroxy-, A., 83.
- Hydrindenes**, tribromo-, and dibromo-2-hydroxy-, A., 355.
- Hydrindene series**, bases in, A., 214.
- α -Hydrindone-3-acetic acid**, and its methyl ester, A., 620.
- Hydroabietic acid**, chloro-, esters of, and hydroxy-, A., 1414.
- Hydroaromatic compounds**, synthesis of, A., 848, 849, 1426, 1428.
- Hydrobenzoin**, preparation of, from benzoin, A., 958.
electric moment of, A., 1213.
sulphite, A., 819.
- Hydrobenzoins**, stereoisomeric, electric moments of, A., 895.
- isoHydrobenzoin**, electric moment of, A., 1213.
- isoHydrobenzoins**, optically active, A., 218.
- Hydrocacoutchouc**, A., 228.
- Hydrocarbon**, C_8H_8 , and its silver derivative, from sodium acetylide and allyl chloride, A., 709.
 C_8H_{10} , from sodium acetylide and allyl bromide or chloride, A., 709.
 $C_{10}H_{16}$, from allyl benzenesulphonate and $\Delta\alpha$ -heptinene, A., 61.
 $C_{10}H_{20}$, from wood turpentine, B., 402.
 $C_{11}H_{18}$, from essential oil of *Geijera parviflora*, B., 781.
 $C_{14}H_{18}$, and its picrate, from dehydrogenation of α -amyrin, A., 625.
 $C_{14}H_{22}$, from dehydrogenation of α -amyrin, A., 625.
 $C_{14}H_{24}$, from 2-methyl-5-isopropylcyclohexylidene-1-acetaldehyde and magnesium ethyl bromide, A., 1068.
 $C_{15}H_{24}$, from 5-keto-3-acetyl-9-methyldecahydronaphthalene, A., 1303.
 $C_{16}H_{14}$, and its dibromo-derivative, from chloro- $\beta\beta'$ -dichlorodivinylarsine and benzene, A., 209.
 $C_{21}H_{36}$, from dehydrogenation of α -amyrin, A., 625.
 $C_{25}H_{22}$, and its reduction product, from bromodiphenylmethane and lithio-3-phenylindene, A., 208.
 $C_{36}H_{24}$, and its iodo-derivative, from isorubrene dioxide and magnesium organic compounds, A., 1151.
 $C_{39}H_{78}$, from the xanthophyll of nettles, A., 1066.
- Hydrocarbons**, empirical formula of, A., 193.
formation of, from alcohols, by action of activated charcoal, A., 476.
preparation of, by reduction of fats under high pressure, A., 932.
configurational relationship of, A., 709, 931, 1267.
manufacture of, (P.), B., 54, 832.
from carbonaceous materials, (P.), B., 794.
from coal, tars, mineral oils, etc., (P.), B., 709.
by destructive hydrogenation, (P.), B., 961.
electrically, from water-gas, B., 913.
during reduction of metal oxides, (P.), B., 794.
synthesis of, by means of enzymes, A., 983.
purification of, (P.), B., 54, 578, 579, 962.
refining of, (P.), B., 54, 147, 193, 332, 578, 873, 915.
treatment of, (P.), B., 380, 474, 577.
apparatus for, (P.), B., 53.
retort for, (P.), B., 1130.
heat treatment of, (P.), B., 145, 381.
low-temperature treatment of, (P.), B., 473.
cracking of, B., 52, 148, 289, 382, 472, 529, 664, 750, 914.
apparatus for, (P.), B., 750.
above critical temperatures, B., 374.
cracking and condensation of, B., 524.
cracking and hydrogenation of, (P.), B., 382.
apparatus for cracking and distillation of, (P.), B., 1130.
distillation of, (P.), B., 528, 749, 831.
polymerisation of distillates of, (P.), B., 832.
polymerised, manufacture of, and their use, (P.), B., 710.
Raman spectra of, A., 146, 893.
rotation temperatures of band spectra of, A., 403.
optical rotation of, A., 931.
action of electric discharge on, A., 819.
decomposition of, by positive rays, A., 693.
heat capacities, entropies and free energies of, A., 42, 1363.
heats of fusion and transition of, A., 1362.
vapour pressure of, A., 417.
vaporisation of, for burners, etc., (P.), B., 1039.
increasing the viscosity of, (P.), B., 474.
- Hydrocarbons**, absorption and retention of, by solid fuels, B., 748, 1080.
as dispersion media, A., 1230.
slow combustion of, A., 572.
equilibria and temperature of combustion of, A., 689.
peroxidation of, during combustion, A., 1030.
pyrolysis of, (P.), B., 382, 433.
photochemical oxidation of, A., 1019.
oxidation of, by air, A., 1015.
catalysts for, (P.), B., 1010.
catalytic oxidation of, (P.), B., 195*.
oxidation products from, (P.), B., 147, 333.
dehydrogenation, polymerisation and condensation of, (P.), B., 794.
conversion of, into lower boiling hydrocarbons, (P.), B., 54, 145, 663.
apparatus for, (P.), B., 471.
and reduction of ores, (P.), B., 209*.
catalytic alkylation of, (P.), B., 105.
allyl isomerism in, A., 948.
condensation of, B., 284; (P.), B., 192.
apparatus for, (P.), B., 54.
by electrical discharge, A., 1249.
fission and condensation of, A., 596.
reactions of, with ammonia, A., 176.
gum inhibitor for, (P.), B., 873.
manufacture of products from, (P.), B., 529.
preparation of anti-knock products from, (P.), B., 381.
manufacture of hydrogen from, (P.), B., 190.
production of hydrogen and its mixtures with nitrogen or carbon monoxide from, (P.), B., 794.
halogenomethyl derivatives, manufacture of, (P.), B., 668.
identification of components of mixtures of, A., 856.
analysis of mixtures of, by combustion, A., 1437.
determination of, in ethyl alcohol containing acetone, B., 963.
in neutral oil from coal tar, B., 870.
- Hydrocarbons**, acetylenic, substituted, preparation of, A., 61.
aliphatic, of high molecular weight, sulphonation of, (P.), B., 684.
aromatic, production of, (P.), B., 382.
polarity and linkings in, A., 669.
X-ray spectra of, A., 151.
action of Tesla discharge on, A., 78.
hydrogenation of, catalytically, under high pressure and temperature, A., 1280.
and their derivatives, picrates of, A., 609.
manufacture of cyano-acetyl derivatives of, (P.), B., 476.
polycyclic, A., 1420.
higher, mercuration of, A., 1435.
liquid, production of, (P.), B., 1084.
naphthenic and unsaturated, determination of, in light oils and motor spirits, B., 284.
polynuclear, and their derivatives, A., 209, 833, 1044, 1282, 1292.
unsaturated, manufacture of condensation products of olefines and, (P.), B., 194.
determination of, in crude Japanese petroleum, B., 1081.
brominated, determination of bromine in, A., 945.
chlorinated, production of, (P.), B., 475.
Raman spectra of, A., 667, 998.
coloured, A., 1407.
cracked, production of, in reduction of nickel ores, (P.), B., 208.
refining of, (P.), B., 665.
cyclic, polymerisation of, A., 473.
refraction of, A., 148.
viscosity, surface tension and parachors of, A., 896.
manufacture of condensation products of diolefines and, (P.), B., 261.
anesthetic potency in, A., 1328.
dicyclic, catalytic dehydrogenation of, A., 339.
polycyclic, aromatic, A., 1407.
diethylenic, polymerisation of, A., 45.
gaseous, treatment of, (P.), B., 960.
heat-treatment of, B., 1081; (P.), B., 379.
magnetic rotation of, A., 148.
resolution of, (P.), B., 1039.
electrical discharge in, A., 60, 578.
flame temperatures of, A., 572.
oxidation of, (P.), B., 54.
conversion of, into hydrogen, (P.), B., 1130.

Hydrocarbons, gaseous, production of hydrogen and carbon black from, (P.), B., 914.
 analysis of, A., 1437; B., 871.
 analysis of mixtures of, by rate of oxidation of phosphorus, A., 587.
 determination of, in air, A., 586.
 heavy, treatment of, (P.), B., 529.
 conversion of, into lighter soils, (P.), B., 236, 1001.
 high-boiling, conversion of, into low-boiling hydrocarbons, (P.), B., 382, 709, 794.
 high-molecular, preparation of, (P.), B., 332.
 containing numerous methyl groups, A., 1267.
 higher, formation of, from water-gas, B., 468.
 thermodynamic properties of vapours of, A., 1222.
 manufacture of nitrogen derivatives of, (P.), B., 194.
 hydroaromatic, and their derivatives, manufacture of, (P.), B., 149.
 light, from hydrogenation of carbonaceous materials, (P.), B., 286.
 refining of, (P.), B., 55.
 treatment of, (P.), B., 54.
 to reduce risk of ignition by spark formation, (P.), B., 1084.
 removal of, from natural gas, (P.), B., 11.
 fractional analysis of, B., 232.
 easily-liquefied, equation of state for, A., 292.
 liquid, formation of, from butylenes, A., 460.
 production of, from coal and tar, B., 956.
 from solid fuels, (P.), B., 1084.
 refining of, (P.), B., 146.
 electrical conductivity of, A., 546, 894.
 in thin layers, A., 285.
 magnetic birefringence of, A., 787.
 treatment of, (P.), B., 528.
 apparatus for distillation of, (P.), B., 577.
 coking of, (P.), B., 146, 618.
 cracking of, (P.), B., 10.
 solubility of water in, B., 792.
 conversion of methane into, B., 527.
 liquid or solid, testing purity of, (P.), B., 579.
 removal of gaseous impurities from, (P.), B., 1001.
 long-chain, melting point and heats of crystallisation of, A., 899.
 low-boiling, production of, from carbonaceous materials, (P.), B., 1130.
 from tars, oils, etc., (P.), B., 1130.
 manufacture of high-boiling hydrocarbons from, (P.), B., 578.
 natural-gas, syntheses from, B., 833.
 non-benzenoid, catalytic oxidation of, A., 932.
 olefinic, preparation of sulphuric esters, alcohols, etc. from, (P.), B., 334.
 oxidisable, preservation of, (P.), B., 854.
 paraffin, crystal structure of, A., 1002.
 detonation ratings of, B., 328.
 sulphonation of, (P.), B., 751.
 manufacture of conversion products of, (P.), B., 578.
 manufacture of hydrogen or gases containing it from, (P.), B., 331.
n-paraffin, physical properties of, A., 792.
 reactions of, in electric discharge, A., 179.
 petroleum, synthesis of, B., 375.
 production of, from carbon monoxide and hydrogen, B., 661.
 identity and purity of, B., 375.
 fractional extraction of, with alcohol, (P.), B., 147, 619, 749.
 treatment of, (P.), B., 472, 474.
 cracking of, (P.), B., 663, 1131.
 flames of, B., 468.
 mixtures of alcohols with, (P.), B., 383.
 sweetening of, (P.), B., 474.
 heavy, manufacture of asphalt by oxidation of, (P.), B., 471.
 polycyclic, aromatic, A., 612, 1157.
 ring, Raman scattering by, A., 1353.
 saturated, energy of C-C and C-H linkings in, A., 1216.
 treatment of, (P.), B., 832, 960.
 thermal decomposition of, A., 819.
 magnetic rotation of gaseous halogen derivatives of, A., 286.
 solid, separation of oxidation products of, (P.), B., 1039.
 unsaturated, manufacture of, (P.), B., 194, 664.
 action of radon on, A., 1252.
 oxidation of, in presence of bromine, A., 1244.
 hydrogenation of, under electric discharge, A., 932.

Hydrocarbons, unsaturated, catalytic addition of hydrogen chloride to, B., 328.
 chlorination of, (P.), B., 621.
 recovery of oxygen-containing derivatives of, from mixtures, (P.), B., 385.
 aromatic, burette for determination of, in oils, B., 53.
 gaseous, polymerisation of, (P.), B., 332.
 determination of, in gases, B., 324.
Hydrocarbostryl, 3-amino-, amyostatic action of, A., 764.
 antipyretic action of, and of its isomerides and derivatives, A., 260.
 and 6-nitro-3-amino-, and their acetyl derivatives, A., 650.
Hydrocarotene, isolation of, from juice of citrus fruits, A., 1421.
Hydrocellulose, distinctions between oxycellulose and, B., 836.
 detection of, B., 478.
Hydrochalkones. See Phenyl β -phenylethyl ketones.
Hydrocharis noursu ranae, stimulated growth of winter buds of, A., 1098.
Hydrocinchonidine dihydrobromide, A., 672.
Hydrocobalticyanic acid, and its salts as precipitation agents in analysis, A., 588.
 potassium salt, freezing point depressions of, A., 1008.
Hydrocupreidine derivatives, A., 1077.
Hydroelectric acid, amino-, A., 847.
 bromo-, A., 960.
Hydroeuphorbone, and its acetate, A., 625.
Hydro-extractors, (P.), B., 95.
 safety devices for, (P.), B., 3.
Hydroferriicyanic acid, potassium salt, production of, electrolytically, B., 1047.
 freezing point depression of, A., 1008.
 decomposition of, in an autoclave, A., 53.
Hydroferrocyanic acid, copper salt, action of, on potassium oxalate, A., 695.
 potassium salt, stability of, A., 1234, 1379.
 decomposition of, in an autoclave, A., 53.
 reaction between formaldehyde and, A., 320.
 detection of, colorimetrically, A., 326.
 sodium or potassium salt, preparation of, in purification of coal gas, (P.), B., 793.
 sodium salt, manufacture of, B., 970.
Hydrogels, A., 1020, 1021.
Hydrogen atoms, diffraction of, A., 782.
 polarisation forces between, A., 1109.
 affinity of, for electrons, A., 13.
 pseudopolar reaction between, A., 895.
 kinetics of combination of, at the critical temperature, A., 1239.
 Schrödinger equation from, A., 1349.
 positive, reactivity of, A., 91, 842.
 molecules, electron terms of, A., 1206.
 ionic, wave mechanics of, A., 1347.
 energy functions of, A., 135.
 formation of, by splitting of helium ions, A., 14.
 production of, (P.), B., 489, 588, 632, 1094.
 apparatus for, (P.), B., 804.
 in the electric arc, (P.), B., 148.
 by liquefaction, (P.), B., 63*.
 by dissociation of ammonia, B., 246.
 from carbon monoxide and steam, (P.), B., 201, 840.
 from coke-oven gas, (P.), B., 526.
 from hydrocarbons, (P.), B., 102, 103, 190.
 from gaseous hydrocarbons, (P.), B., 914, 1130.
 from mixed gases containing hydrocarbons, (P.), B., 432.
 by oxidation of phosphorus acids, (P.), B., 19.
 by action of steam on metals, (P.), B., 719.
 and gases containing it, (P.), B., 288, 758.
 from methane and similar hydrocarbons, (P.), B., 331.
 and carbon monoxide, (P.), B., 432.
 from methane, B., 325.
 and its mixtures with carbon monoxide or nitrogen, from hydrocarbons, (P.), B., 794.
 and its mixtures with nitrogen from carbon monoxide, B., 326.
 from coke-oven gas, B., 324, 326.
 catalytic production of, by the water-gas reaction, A., 1017, 1134.
 production of gases rich in, (P.), B., 1129.
 production of mixtures of nitrogen and, (P.), B., 440.
 from gases rich in methane, B., 326.

Hydrogen, purification of, and its mixtures, (P.), B., 295.
 refraction in, A., 898.
 spectrum of, A., 887.
 intensity in, A., 779.
 effect of electric and magnetic fields on Balmer lines of, A., 135.
 intensities of Balmer lines in, B., 275.
 reversal of Balmer lines in, A., 887.
 Balmer and Paschen lines in, A., 887.
 produced by condensed discharge, A., 779.
 Boltzmann distribution in arc spectrum of, A., 779.
 excitation of Balmer and secondary spectra of, A., 992.
 band spectrum of, A., 135, 136, 403, 539, 1348.
 continuous spectrum of, A., 4, 779.
 continuous and many-lined spectra of, A., 403, 992, 1203.
 continuous molecular spectrum of, A., 991.
 resonance spectrum of, A., 1343.
 secondary spectrum of, A., 4, 539.
 spectrum of mixed flames of nitrous oxide and, A., 1210.
 polarisation of Raman scattering by, A., 997.
 Stark effect in, A., 992, 1203.
 production of atomic rays of, A., 15.
 discharge of canal rays of, A., 782.
 bombardment of metals by canal rays from, A., 1347.
 effective cross-section of, for slow electrons, A., 406.
 molecular states of, A., 4.
 electron impacts in, A., 12.
 loss of energy by slow electrons in, A., 994.
 scattering of high-velocity electrons in, A., 542.
 scattering of *H*-particles in, A., 889.
 electric discharge in, A., 539.
 electronic discharge in, A., 406.
 effect of α -particles from radon on, A., 142.
 effect of light on electrodeposition of, A., 1136.
 limiting currents for electrodeposition of, A., 1238.
 effect of temperature on spark potential of, A., 275.
 overvoltage of, at metal surfaces, A., 570.
 influence of bromine vapour on mobility of ions in, A., 890.
 clean-up phenomena in, A., 539.
 dielectric coefficient of, A., 1113.
 specific heat of, A., 899.
 heat of adsorption of, on chromium oxide and zinc oxide catalysts, A., 904.
 melting curve of, A., 1004.
 vapour pressure and entropy of crystals of, A., 295.
 compressibility of, A., 156.
 entropy of, A., 31.
 entropy, free energy, and dissociation of, A., 295.
 viscosity of, A., 32, 1117.
 adsorption of, A., 1006.
 on amorphous carbon, A., 1006.
 on charcoal, A., 677.
 on copper, A., 1365.
 by iron, A., 1120.
 on manganous oxide, A., 902.
 by nickel poisoned with carbon monoxide, A., 902.
 influence of hydrogen sulphide on, by platinum, A., 1120.
 by platinum metals, A., 678.
 apparatus for, by silver permanganate, A., 1388.
 by zinc oxide-chromium oxide catalyst, A., 1226.
 by silver permanganate, A., 1256.
 desorption of, from platinum as result of ionisation, A., 903.
 dissociation of, A., 1349.
 diffusion of, through iron cathodes, A., 1012.
 physical constants of mixtures of methane and, A., 417.
 equation of state for, A., 792.
 Beattie-Bridgeman equation and Bartlett's data for, A., 554.
 Beattie-Bridgeman equation and Bartlett's data for mixtures of nitrogen and, A., 554.
 van der Waals' forces for, at large inter-atomic distances, A., 282.
 behaviour of benzene in, at high temperature, B., 230.
 equilibrium of, with carbon monoxide and nitrogen, A., 1370.
 with iron and oxygen, A., 41.
 quantum mechanics of bimolecular reactions between halogens and, A., 1140.
 reaction of, with carbon dioxide at surface of hot metal filaments, A., 576.
 catalysts for, A., 176.
 catalytic decomposition of carbon disulphide by, A., 1376.
 photochemical reactions of, with bromine and chlorine, A., 806.

Hydrogen, effect of nitrogen trichloride on reaction between chlorine and, A., 179.
 photochemical union of, with chlorine, A., 47, 179, 319, 1136, 1137, 1250.
 photochemical reaction between iodine and, A., 578.
 photochemical action of, with iodine monochloride, A., 180, 441, 578, 1018.
 combustion of mixtures of, with methane and coal gas, A., 1371.
 cathodic combustion of mixtures of oxygen and, A., 1249.
 union of oxygen and, A., 688.
 on copper catalysts, A., 918.
 effect of amount of catalyst on, A., 46.
 influence of halogens on, A., 1244.
 effect of iodine on, A., 575.
 photochemical combination of oxygen and, A., 1136.
 photosensitised reaction of oxygen and, in presence of chlorine, A., 806, 1137.
 thermal combination of oxygen and, A., 320.
 reactions of, with oxygen on platinum wire at low temperatures, A., 692.
 action of, on colloidal palladium, A., 1017.
 displacement of antimony from solutions by, A., 1242.
 displacement of arsenic from solutions by, A., 1242.
 displacement of bismuth from solutions by, A., 1243.
 activation of, by hydrogenase, A., 525.
 manufacture of oxygenated organic compounds from carbon oxides and, (P.), B., 194.
Hydrogen, active, A., 330.
 atomic, excitation of, A., 403.
 scattering of, by gases, A., 1348.
 atomic, occluded by iron nitride, A., 53, 1252.
 atomic and molecular, continuous spectra of, A., 275.
 interaction of, A., 1252.
 triatomic, A., 440, 805.
 compressed, emission spectrum of, A., 991.
 ionised, spectrum of, A., 13.
 velocity of ions in, A., 14.
 molecular, Stark effect in, A., 663.
 scattering of electrons in, A., 12.
 nascent, reduction with, A., 911.
 ortho- and para-, A., 895.
 equilibrium of, A., 678, 1356.
 para-, formation of, under pressure at low temperatures, A., 1215.
 crystal structure of, at liquid helium temperatures, A., 150.
 thermal transformation of, A., 174.
 transformation of, on platinum, A., 691.
 technical, determination of carbon and nitrogen in, B., 348.
Hydrogen bromide. See Hydrobromic acid under Bromine.
 chloride. See Hydrochloric acid under Chlorine.
 cyanide. See Hydrocyanic acid under Cyanogen.
 halides. See Halogen hydrides.
 iodide. See Hydriodic acid under Iodine.
 peroxide, formation of, A., 1139.
 in thermal combination of hydrogen and oxygen, A., 320.
 by lactic acid bacteria, A., 394.
 preparation of, with streaming electrolytes, A., 1248.
 manufacture of, (P.), B., 588, 924.
 electrolysis apparatus for, (P.), B., 305.
 from metallic peroxides, B., 1091.
 purification of solutions of, (P.), B., 758.
 Raman spectrum of, A., 545.
 potential of, and its reduction by metallic ions, A., 569.
 conductivities of aqueous mixtures of organic acids with, A., 434.
 dielectric constants of mixtures of ether and, A., 793.
 substitution of, for water of crystallisation, A., 1019.
 decomposition of, in presence of catalysts, A., 1134.
 in presence of active carbon and other adsorbents, A., 803.
 by ferric hydroxide sol, A., 1243.
 effect of copper and lead ions on, B., 110.
 catalytic decomposition of, A., 317.
 influence of azides on, by colloidal platinum, A., 175.
 decomposition of solutions of, by colloidal ferric oxide, A., 562.
 photochemical decomposition of solutions of, in presence of sodium nitroprusside, A., 441.
 destruction of catalase by, A., 1188.
 reduction of iodates by, A., 324, 573.
 oxidation of iodine by, A., 916.

- Hydrogen peroxide**, reactions of, with metals, A., 1114.
 production of compounds of sodium phosphate and, (P.), B., 971.
 manufacture of solid compounds of, (P.), B., 202.
 intensifying action of, on latent photographic image, A., 1250.
 pharmaceutical testing of, B., 993.
 detection of, microchemically, A., 925.
 apparatus for determination of, B., 880.
 determination of, manometrically, A., 699.
 by potentiometric titration, A., 1023.
 volumetrically, A., 1384.
 in presence of Caro's acid and persulphuric acid, A., 326.
 in human blood, A., 519.
 phosphide. See **Phosphorus trihydride**.
 selenide, solid, structure of, A., 671.
 selenide and sulphide, infra-red spectra of, A., 283.
 solid, crystal structure of, A., 150.
 selenide and telluride, vapour pressures of, A., 1117.
 sulphide, molecular structure of, A., 287.
 production of, and its mixtures with sulphur dioxide, (P.), B., 1140.
 from aqueous solutions of alkali carbonate, bicarbonate, and hydrosulphide, (P.), B., 540.
 Feld process for extraction of, from coal gas, B., 99.
 infra-red absorption spectrum of, A., 667.
 positive-ray analysis of, A., 15.
 solid, structure of, A., 671.
 absorption and regeneration of, by alkaline solutions, B., 675.
 absorption of, by potassium benzenesulphonate, A., 207.
 adsorbent material for, (P.), B., 911.
 solubility of, in various solvents, A., 901.
 hydrate, composition of, A., 583.
 decomposition of, in the electric arc, B., 1092.
 oxidation of, A., 1240.
 kinetics of, A., 1014.
 to sulphur, in presence of brown-coal coke, B., 293.
 catalytic oxidation of, (P.), B., 295.
 explosions of mixtures of oxygen and, A., 689.
 action of, on acid chlorides, A., 86.
 on acid chloroanhydrides, A., 88.
 with mercury, A., 808.
 on nitric oxide in presence of water, A., 922.
 with oxygen, A., 1239.
 on potassium chromate solutions, A., 1021.
 on sulphur dioxide, A., 1134.
 production of carbon disulphide from coke and, B., 51.
 removal of, from benzol, B., 575.
 from gases, (P.), B., 103, 331, 576.
 with formation of zinc sulphide, (P.), B., 234.
 bactericidal action of, A., 396.
 toxicity of, to spores, B., 821.
 iron content and resistance of the organism to, A., 119.
 in faeces and in intestines, A., 1095.
 poisoning by. See under **Poisoning**.
 determination of, A., 586.
 microchemically, B., 844.
 in gases from oil stills, B., 284.
 in gas mixtures, (P.), B., 295.
 in sewage, B., 948.
- Hydrogen detection and determination** :—
 analysis of mixtures of ethane, methane, and, A., 54, 450.
 detection of oxygen in, (P.), B., 804.
 determination of, microchemically, A., 374, 638.
 ultra-microchemically, A., 971.
 in the Orsat apparatus by Jäger's method, B., 791.
 by Pregl's method, A., 107.
 by ter Meulen-Heslinga method, A., 638.
 in activated carbon, A., 325.
 in gaseous mixtures, B., 348.
 absorption tube for, in organic substances, A., 1384.
- Hydrogen ions**, variation of concentration of, with carbon dioxide pressure, A., 321.
 concentration of, and interfacial tension, A., 1228.
 rôle of hydrogen linkings in conduction by hydroxyl ions and, A., 1129.
 mobility of, A., 1012.
 positive, production of an intense beam of, A., 407.
 triatomic, A., 1109.
- Hydrogen ions**, nomograph for evaluation of, A., 1026.
 determination of, A., 450.
 portable apparatus for, A., 190.
 spot apparatus for, A., 456.
 with the Haber-Klemensiewicz cell, B., 311.
 with photo-electric colorimeter, A., 703.
 with Wulff's colorimeter, A., 811.
 with the Hellige comparator, A., 585.
 with antimony electrodes, A., 585.
 with glass electrodes, A., 699.
 with low-resistance glass electrodes, A., 449.
 with quinhydrone electrodes, A., 1141, 1383.
 electrode containers for, A., 329.
 with indicators, A., 450, 1023.
 catalytically and electrometrically, A., 811.
 colorimetrically, A., 778.
 in sea water, A., 925.
 Tödt's "spot apparatus" for, A., 325.
 photometrically, A., 585.
 tables for, from potential, A., 450.
 above 100°, A., 184.
 in buffer solutions with antimony-antimony oxide electrodes, A., 811.
 in unbuffered solutions, A., 585.
 in cheese whey, B., 609.
 in presence of neutral salts, A., 1127.
 in nickel-plating baths, B., 548.
 in serum, A., 754.
 in soils, B., 556.
 apparatus for, in solutions, (P.), B., 594.
- Hydrogen linking**, ionic nature of, A., 893.
- Hydrogenase**, A., 525.
- Hydrogenation**, apparatus for, (P.), B., 2.
 under pressure, (P.), B., 294.
 under pressure with iodine catalyst, B., 1003.
 destructive, catalysts for, (P.), B., 526.
- Hydrohydrastinine**, isolation of, from *Corydalis cava*, A., 855.
- Hydrolysis of salts**, A., 910.
- Hydrometers** for determination of density of heavy liquids, A., 592.
 expansion, A., 592.
- Hydromethylcaouthouc**, A., 228.
- Hydromuconic acid**, A., 1037.
- Hydronaphthalene**, and its derivatives, stereochemistry of, A., 1288.
- Hydronaphthalenes**, oxidation-reduction of, catalytically, A., 1288.
- Hydronarceine**, A., 969.
- Hydronarcotimethine**, and its salts and derivatives, A., 969.
- Hydronornarceine**, A., 969.
- Hydronornarcotimethine**, A., 969.
- Hydroquinidine**, synthesis of, A., 1433.
- Hydroquinine**, synthesis of, A., 1433.
 sulphonation of, A., 371.
- Hydroquinotoxin**, *N*-bromo-, A., 1433.
- Hydrosanguinarine**, A., 1311.
- Hydrospingomyelin**, and its acetyl derivative, A., 245.
- Hydrotropy**, A., 423.
- Hydrovanadieyanic acid**, potassium salt, A., 52.
- Hydroxides**, Raman spectra of, A., 146.
- Hydroxy-acids**, carboxylic, fission of, by heating with water, under pressure, A., 484.
 organic, and their salts, reaction of halogens with, A., 802.
 esters, catalysis by alumina and zinc oxide of disproportionation of, A., 710.
 determination of, micro-analytically, by means of photo-electric cell, A., 935.
- Hydroxy-aldehydes**, isomerisation of, A., 353.
- o-Hydroxy-aldehydes**, acetylation of, A., 353.
- Hydroxy-compounds**, identification of, by means of arylcarbamides, A., 834.
 detection of, by addition of cobalt salts and sodium hydroxide, A., 1174.
- Hydroxyl**, free, A., 1215.
 band spectrum of, in air afterglow, A., 404.
- Hydroxyl groups**, methylation of, A., 85, 618, 819.
 aromatic, reactivity of, A., 1410.
 phenolic, iodo-oxybenzoate as reagent for, A., 856.
 determination of, in organic compounds, A., 752, 1035.

Hydroxyl ions, Raman effect in, A., 668.
 rôle of hydrogen linkings in conduction by hydrogen ions and, A., 1129.

Hydroxylamine, as reagent for precipitation, A., 581.
 reaction of, with ethyl phthalimide-*N*-carboxylate, A., 619.
 compounds of, with molybdic acid, A., 923.

Hydroxypentamminocobaltic persulphate. See under Cobalt.

Hygrometers, (P.), B., 50, 789.

Hygrophyla spinosa, constituents of roots of, A., 1101.

Hygrosterol, and its derivatives, A., 1101.

Hymenomyces, soluble enzymes of, A., 131, 876, 1458.

Hyoscyamus extract, Ital. P.V., B., 697.

Hyperchlorhydria, urinary p_H and alveolar carbon dioxide in, A., 1083.

Hyperglycæmia, experimental, and the reticulo-endothelial system, A., 516.
 insulin, A., 528.

Hyperparathyroidism, experimental, hypocalcæmia following, A., 1446.
 chronic, "parathormone" dosage in, A., 1324.

Hyperthermia, A., 519.

Hyperthyroidism, complement value in, A., 1324.

Hypnotics, ultra-violet absorption spectra of, A., 784.
 reduction of osmotic pressure in serum by, A., 121.
 allied to chloral and to urethane, A., 872.

Hypobromous acid. See under Bromine.

Hypocalcæmia in relation to parathyroids, A., 382.
 relation between tetany and, A., 879.

Hypochlorites. See under Chlorine.

Hyposiderma (cattle grubs), insecticides against, B., 269.

Hypoglycæmia, A., 977.
 substances producing, A., 516, 872, 1043.
 after extirpation of pancreas, A., 758, 1083.
 and the reticulo-endothelial system, A., 1194.
 terminal, A., 511.

Hyponitrites. See under Nitrogen.

Hypophosphoric acid. See under Phosphorus.

Hypophosphorous acid. See under Phosphorus.

Hypophysis. See Pituitary.

Hypoxanthine, determination of, in blood, A., 1440.

Hyrax, a new mounting medium for diatoms, A., 380.

Hyzone. See Hydrogen, triatomic.

I.

Ice, reflection of infra-red rays by, A., 892.
 vapour pressure of, at low temperatures, A., 294.
 crystal structure of, A., 288.
 artificial, for skating rinks, (P.), B., 66, 493.

Ices, water, addition of honey to, B., 315.

Ice colours. See under Colours.

Ice-cream, production of, (P.), B., 823.
 use of dry skim milk in, B., 739, 779.
 effect of heat treatment on dry skim milk and condensed skim milk for, B., 1119.
 effect of pasteurising and homogenising temperatures on properties of, B., 779.
 influence of sweetened frozen cream on development of swell in, B., 740.
 influence of sugar and butter fat on, B., 134.
 hardened, B., 1071.
 determination of fat in, by a non-acid Babcock method, B., 1071.
 determination of butter fat in, B., 134.

Icthyocoll, coacervates and sols of, A., 428.

Icterus, obstructive, in dogs, effect of, on blood constituents, A., 511.
 detection of bilirubin in skin in, A., 1446.

Idæin, chloride, synthesis of, A., 1425.

Idiots, blood of, A., 977.
 Mongolian, carbohydrate metabolism in, A., 1446.

Idosyl-6-amine, derivatives of, A., 71.

Ignition, spark, of gas mixtures of low inflammability, A., 1131.

Illinium, concentration and isolation of, A., 445.

Ilmenite, concentration of, A., 254.
 from Madras, A., 1145.

Imides, chlorides of, A., 608, 831.
 acid, cyclic, formation and transformation of, A., 1291.

Iminazoles. See Glyoxalines.

Iminoethers, aliphatic, reaction of, with hydrazine, A., 633.

Iminosulphonic acids, α -hydroxy-, crystallography of salts of, A., 551.

Immunohæmolysis, A., 974.

Impregnation, compositions for, (P.), B., 404.
 solutions for, (P.), B., 754.

Incandescent bodies, measurement of temperature of, (P.), B., 3.

Incinerators, (P.), B., 908.

Indandione. See Diketohydrindene.

Indanthrone, production of, B., 105, 875.

Indanthrone dyes, (P.), B., 290.
 preparation of, (P.), B., 14.
 vat, manufacture of, (P.), B., 669, 798, 1004.
 fast to chlorine, (P.), B., 623.

Indene, and its derivatives, polymerisation of, A., 833.
 compounds of phenols with, (P.), B., 918.

Indenes, stereoisomerism of, A., 731.

Indenes, *mono*- and *tri*-bromo-, A., 355.

Indenecarboxylic acids, A., 355.

Indican, detection and determination of, in urine, A., 1082.

Indican, 6-bromo-, synthesis of, and its tetrahydrate, A., 468.

Indicators, A., 952, 1070, 1383.
 colour of solutions of, A., 699.
 in presence of neutral salts, A., 39.
 for determination of hydrogen ions, A., 585.
 achromatic, A., 184.
 acid-base, dissociation of, in ethyl alcohol, A., 1234.
 adsorption, for use with silver solutions, A., 56.
 azo-, constitution of, A., 344.
 diphenylamine and diphenylbenzidine, for oxidation-reduction reactions, A., 54.
 fluorescent, A., 698.
 oxidation-reduction, of triarylmethane group, A., 1256.
 radioactive, detection of adlineation by, A., 1007.
 reversible oxidation, of high potential, A., 1385.

Indigo, bromination of, electrochemically, A., 743.
 use of nitrites in nitrate discharge of, B., 800.

Indigo dyes, manufacture of, (P.), B., 669.
 closing of heterocyclic rings in, A., 494.
 vat, manufacture of, (P.), B., 669, 920.
 manufacture of stable reduction compounds of, (P.), B., 14.

Indirubin, 6-bromo-, A., 468.

Indium, arc spectrum of, A., 1204.
 ionised, spectrum of, A., 1204, 1344.
 electrical resistance of, A., 674.
 nuclear moment of, A., 888, 1204.

Indole, polymerisation of, A., 1165, 1429.
 action of aqueous halogen acids on, A., 1165.
 syntheses with, A., 1428.
 complex compound of, with potassium nitroprusside, A., 609.
 derivatives, A., 1429.
 synthesis of, A., 1306.
 action of nitric acid on, A., 366, 1165.
 alkylated, manufacture of, (P.), B., 386.

Indole-2-carboxylic acid, 6-bromo-3-hydroxy-, methyl ester and diacetyl derivative, A., 468.
 5:7-dinitro-, azide, and 3:5:7-trinitro-, methyl ester, A., 750.

Indolenines, A., 1072.

Indolenine-yellow, constitution of, A., 238.

δ -3-Indolylbutyl alcohol, and its derivatives, A., 363.

δ -3-Indolylbutylmalonic acid, A., 363.

γ -3-Indolylbutyric acid, synthesis of, and its derivatives, A., 363.

Indolylpropionic acid, urethane from, A., 1306.

***dl*- β -Indolylpropionic acid**, α -hydroxy-, and its barium salt, and its use in nutrition, A., 514.

γ -3-Indolylpropyl alcohol, and its derivatives, A., 363.

γ -3-Indolylpropylcarbamic acid, methyl ester, A., 363.

γ -3-Indolylpropylphthalimide, A., 363.

α -Indolylurethane, *di*- and *tri*-nitro-, A., 750.

Indone, 2:3:6-tribromo-, A., 949.

Indones, A., 731.

Indophenine, A., 104.
 constitution of, A., 369.

Indophenols, blue sulphur dye from, (P.), B., 667.

Indoxyl sulphate, synthesis of, in dogs, A., 1450.

Inertia, chemical, A., 1016.

Infants, mineral metabolism in, A., 1086.

Inflammation, A., 253.
 precipitation of colloidal silver in tissues in, A., 114.

- Influenza, bacillus.** See under *Bacilli*.
- Ingots, casting of, (P.), B., 765*.**
- iron mould for, (P.), B., 931.**
- Injections, micro-, quantitative, A., 1202.**
- Ink, (P.), B., 852.**
- production of, (P.), B., 818.
- duplicating, (P.), B., 852.
- printing, (P.), B., 72.
- production of, (P.), B., 94, 1106.
- effect of carbon black on fluidity of, B., 851.
- use of "albertols" in, B., 642.
- removal of, from paper, B., 212.
- intaglio, manufacture of, (P.), B., 261.
- detection of aluminium and magnesium in, B., 260.
- analysis of, B., 1061.
- detection of differences in, by ultra-violet light, B., 212.
- Inorganic compounds, internal structure of, at high temperatures, A., 1356.**
- biological value of, A., 1461.
- non-metallic, application of mineralogical and petrographical data to testing of, B., 950.
- solid, structure of, A., 1236.
- at high temperatures, A., 999.
- l*- and *i*-Inositol, X-ray structure of, A., 1219.**
- Inositolphosphoric acid, calcium magnesium salts, effect of, on skeletal mineral metabolism, A., 1326.**
- Insanity, A., 872, 1084.**
- Insects, intestinal secretion in, A., 643.**
- waxes from, A., 975, 1321.
- composition for repelling, (P.), B., 46.
- Insecticides, (P.), B., 46, 92, 261, 314, 568, 648, 744, 776, 821, 858, 864, 908, 1114, 1124.**
- manufacture of, (P.), B., 656, 1069.
- removal of residue of, after spraying, B., 692.
- nicotine activators for, B., 508.
- oil sprays as, B., 1068.
- rotenone as, B., 268, 508.
- comparison of rotenone, nicotine and pyrethrum as, B., 508.
- use of waste sulphite material from paper mills for, B., 990.
- wood carbolineum as, B., 83, 132.
- lethal power of, against European corn borer, B., 691.
- for control of European elm scale, B., 692.
- for spraying fruit trees, etc., (P.), B., 776.
- for plants, (P.), B., 83.
- barium fluosilicate, determination of, on apples after spraying, B., 647.
- carbolineum, effect of on fruit trees, B., 605.
- contact, B., 361.
- efficiency of, B., 821.
- lead arsenate and nicotine tannate, corrective and sticker for, B., 989.
- lime-sulphur, B., 361.
- manganese arsenate, manufacture of, (P.), B., 361.
- mineral oil and tar, analysis and determination of constants of, B., 313.
- oil emulsion-sulphur, physical properties of, B., 268.
- petroleum, B., 268.
- pyrethrum, (P.), B., 320.
- for beetles on loganberry and raspberry, B., 216.
- effect of soap on toxicity of, B., 508.
- determination of active constituents of, B., 908.
- determination of arsenic in, volumetrically, B., 313, 908.
- determination of fluorine in, by Travers' method, B., 1048.
- determination of mercury in, B., 647.
- determination of nicotine in, B., 565.
- determination of sulphur in, B., 269.
- Insulating board, manufacture of, from cornstalks, B., 340.**
- Insulating compositions, preparation of, (P.), B., 498.**
- heat, (P.), B., 261.
- Insulating cork.** See under *Cork*.
- Insulating materials, (P.), B., 30*.**
- photography of ionisation in, A., 441.
- electrical, (P.), B., 70, 640, 726, 766, 767, 934, 1104.
- manufacture of, (P.), B., 123, 725, 770.
- impregnation of, (P.), B., 257.
- use of polymerised hydrocarbons as, (P.), B., 710.
- synthetic resins as, B., 1104.
- rubber compositions for, (P.), B., 731.
- containing balata or gutta-percha, (P.), B., 1016.
- for sparking plugs, (P.), B., 1050.
- Insulating materials, electrical, for submarine conductors, (P.), B., 640.**
- cellulosic, manufacture of, (P.), B., 1016.
- cotton fabric, manufacture of, (P.), B., 486.
- inorganic, (P.), B., 1104.
- resinous, manufacture and use of, (P.), B., 358.
- sheet and tube, (P.), B., 305.
- heat, B., 1029; (P.), B., 94, 422, 827, 1127.
- manufacture of, (P.), B., 614, 632, 866, 1052.
- properties of fabrics as, B., 835.
- diatoms in, B., 657.
- of low density, (P.), B., 1011.
- aluminous, B., 843.
- porous, production of, (P.), B., 634.
- smoulder-proof, treatment of, (P.), B., 249.
- heat and sound, (P.), B., 48, 66.
- Insulating oils, composition for, (P.), B., 332.**
- purification of, (P.), B., 578.
- conductivity of, A., 410.
- effect of carbon black on, B., 469.
- deoxidiser for, (P.), B., 147.
- mineral, dielectric loss in, A., 546.
- determination of acidity in, potentiometrically, B., 285.
- Insulating paper, B., 479.**
- production of, (P.), B., 291.
- Insulating varnishes, drying of, (P.), B., 818.**
- Insulation, heat, with solid insulators, A., 591.**
- Insulators, electrical, (P.), B., 305.**
- manufacture of, (P.), B., 893.
- of ceramic material, (P.), B., 306.
- for sparking plugs, (P.), B., 767.
- aluminium oxide, (P.), B., 257.
- hard-paper, (P.), B., 449, 499.
- electrical and thermal, (P.), B., 305.
- solid, mechanism of electric discharge in, A., 546.
- dielectric constant and damping of, A., 1112.
- Insulin, molecular weight of, A., 658, 1096.**
- extraction of, A., 771.
- from blood, A., 1096.
- effect of pancreatic secretion on production of, A., 658.
- inhibition of formation of, by carbohydrates, A., 528.
- X-ray spectrum of, during swelling in water, A., 428.
- spectroscopic properties of, A., 397.
- action of, A., 397, 879, 1096, 1194.
- on amino-acid content of blood, A., 771.
- on blood-fat and on alimentary lipæmia, A., 253.
- on blood-sugar, A., 1194.
- on rate of dialysis of diabetic blood-sugar, A., 879.
- after ingestion of dextrose, A., 1096.
- on cellular fixation of dextrose, A., 397.
- on fat metabolism, A., 1461.
- on glycogen distribution, A., 764.
- in marine fishes, A., 771.
- on liver-glycogen, A., 658.
- on glycogen content of perfused rabbits' liver, A., 528.
- on glycogen in liver and muscle, A., 268.
- on growth, nitrogen excretion, and respiratory metabolism, A., 528.
- in presence of lipins, A., 771.
- on lipins of blood and organs, A., 528.
- on milk secretion, A., 1322.
- in phloridzin diabetes, A., 128.
- on distribution of sugar in the organism, A., 128.
- on sugar in bile, A., 397.
- on liver-sugar, A., 1461.
- on tissue oxidation, A., 268.
- action of adrenaline and, in frogs, A., 1194.
- on blood-acetone and -sugar, A., 879.
- action of acid alcohol on, A., 1194.
- influence of animal tissues on activity of, A., 128.
- influence of blood on activity of, A., 128.
- action of proteolytic enzymes on, A., 771, 1194.
- induced oxidation with, A., 1017.
- resistance of, to action of bacteria, A., 658.
- sensitivity towards, of animals on carbohydrate-free diets, A., 771.
- suprarenal cortex in prevention of shock from, A., 1096.
- antagonism between adrenaline and, A., 528.
- action of phloridzin and, A., 268.
- proteases in blood and urine after administration of, A., 771.

- Insulin**, hyperglycaemia from administration of, A., 268, 528, 658.
 hypoglycaemic action of, A., 872.
 in relation to phosphorylation, A., 1327.
 in urine, A., 1194.
 crystalline, A., 1194.
 action of proteolytic enzymes on, A., 397.
 effect of electrolytes on permeability of tissues to, A., 1336.
 crystalline and technical, difference of activity of, A., 128.
 intravenous, effect of, on blood-sugar, A., 987.
 evaluation of, A., 397.
- Interfacial tension** and π , A., 1228.
- Interferometers**, semi-silvering of plates of, A., 888.
- Röntgen-ray**, determination of molecular form with, A., 413.
- Interaction**, A., 1119.
- Intestinal juice**, proteolytic enzymes in, A., 1082.
- Intestines**, closed loops of, A., 759.
 flow of juice from, after milk ingestion, A., 862.
 bile acid : fat ratio of contents of, A., 1084.
 influence of calcium on diffusion of sugars through, A., 765.
 proteolytic action of extracts of, A., 521.
 of sucklings, reduction of sterols in, A., 113.
 human, anaerobic decomposition of volatile fatty acids in, A., 113.
 small, proteinogenesis of, A., 868.
 motor reactions of, to histamine, A., 388.
- Inulin**, A., 716, 941.
 depolymerisation of, A., 941.
 hydrolysis of, under pressure, B., 459.
 manufacture of pure *laevulose* from, (P.), B., 562.
 in plants, A., 776.
 hydrolysed, occurrence of non-reducing disaccharides in, A., 202.
- Inulinase**, active, formation of, from *Aspergillus niger*, A., 941.
- Invertase**, influence of ultra-violet light on, A., 1192.
 Michaelis constant for, A., 1455.
 adsorption of, by charcoal, A., 160.
 activity of solutions of, on keeping, A., 1190.
 mechanism of fermentation by, A., 520.
 yeast, antigenic properties of, A., 249.
 determination of, in fungus cultures, A., 524.
- Iodates**, Iodic acid, and Iodides. See under Iodine.
- Iodine**, atomic weight of, A., 543, 1208.
 distribution of, in climatic soil types, (P.), B., 132.
 working up of residue of, A., 448, 697, 1022.
 recovery of, from brine, (P.), B., 440.
 from phosphates, B., 246.
 liberation of, in mineral waters, (P.), B., 540.
 separation of, from iodised protein and from thyroid pulp, A., 1081.
 arc spectrum of, A., 887, 1344.
 infra-red spectrum of, A., 887.
 infra-red absorption spectrum of, A., 1344.
 infra-red fluorescence spectrum of, A., 1344.
 fluorescence of, A., 7.
 ultra-violet fluorescence of, A., 22.
 ionised, spectrum of, A., 276.
 extinction of sodium light by, A., 890.
 photosensitising action of, A., 180.
 heat of dissociation of, A., 1222.
 fictive volume of, in potassium iodide solution, A., 560.
 adsorption of, on sublimed calcium fluoride, A., 902.
 by yeast cells, A., 878.
 entropy of, A., 429.
 solubility of, A., 677.
 in water, A., 418.
 mutual solubility of tannin and, in water, B., 862.
 partition of, between carbon disulphide and water, A., 1225.
 Beer's law for violet solutions of, A., 143.
 production of aqueous dispersions or solutions of, (P.), B., 882.
 effect of light on equilibrium of ferrocyanide and, A., 308.
 hydrolysis of, A., 1131.
 hydrolysis constant of, A., 1369.
 oxidation of, by hydrogen peroxide, A., 916.
 photochemical oxidation with, A., 578.
 reaction of, with arsenious acid, A., 916.
 photochemical reaction of, with ethylene iodide, A., 180, 806.
 with hexene, A., 282.
 with hydrogen, A., 578.
 with potassium oxalate, A., 1136.
 reactions between hydrogen peroxide, iodate and, A., 324.
 reactivity of solid thiosulphates with, A., 692.
- Iodine in filter-papers**, A., 329.
 assimilation of, by plants, and its effect in the body, A., 1451.
 content of, in seaweeds, A., 775.
 intake of, by vegetables, A., 774.
 pharmacology of, A., 1330.
 in nutrition in North China, A., 114.
 effect of, on gaseous metabolism, A., 761.
 excretion of, after administration of sodium tetraiodophenol-phthalein, A., 870.
 influence of, on goitre, A., 511, 759.
 in relation to endemic goitre in Hungary, A., 114.
 effect of feeding with, on content of, in organs, A., 1329.
 in blood in relation to ovarian function, A., 761.
 in blood and urine, effect of thyroxine on, A., 1337.
 retention and distribution of, in rabbits, A., 982.
 content of, in thyroid, A., 508.
 in lamb's thyroid, B., 316.
 in sheep and ox thyroids, A., 111.
 metabolism of. See under Metabolism.
 colloidal, toxicity of, A., 982.
 tervalent, parachor of, A., 670.
 tincture, B., 610.
 action of, on skin, A., 518.
 determination of potassium iodide in, B., 630.
- Iodine bromide**, ultra-violet fluorescence of, A., 22.
 monochloride, absorption spectra and colour of solutions of, A., 996.
 band spectrum of, A., 891.
 rotational constants of, A., 784.
 vibrational levels of molecules of, A., 891.
 thermodynamic constants of, A., 1010.
 photochemical action of, with hydrogen, A., 180, 441, 578, 1018.
 trichloride, preparation of, A., 324.
 pentoxide, and its hydrate, A., 1225.
 interaction between nitric oxide and, A., 324.
- Hydriodic acid**, preparation of, A., 810.
 absorption spectrum and photochemical decomposition of, A., 806.
 heat of formation of, A., 685.
 viscosity of, A., 1117.
- Iodides**, production of, from seaweeds, (P.), B., 247.
 oxidation of, by persulphates, A., 802.
 neutral salt effect of reaction of ferric salts with, A., 802.
 vascular action of, A., 652.
 determination of, with nitrite, A., 1142.
 volumetrically, with silver, B., 630.
 in presence of other halogens, A., 185, 325.
 in presence of bromates and iodates, A., 55.
 in common salt, B., 391.
- Iodic acid**, preparation of, A., 324.
 reaction between oxalic acid and, A., 690.
- Iodates**, oxidation of iodine to, by hydrogen peroxide, A., 916.
 reduction of, by hydrogen peroxide, A., 573.
 toxic action of, A., 261.
 determination of, in presence of bromates and iodides, A., 55.
- Periodic acid**, basicity of, A., 686.
- Periodates**, identification of alkaloids by formation of, A., 28.
- Iodine organic compounds**, oxidation of, by organic per-acids, A., 207.
- Iodine determination** :—
 analysis of dilute solutions of, A., 325.
 determination of, in minute amounts, A., 699.
 with silver, A., 1023.
 in blood, A., 755.
 microchemically, in blood and urine, A., 538.
 in iodised fatty oils, B., 1018.
 in iodised common salt, B., 1048.
 in organic products, A., 134.
 microchemically, in organic substances, A., 402.
- Iodine ions**, reaction of, with ferric ions, A., 573.
- Iodo eosin**, as indicator, A., 1070.
- Iodoform**, action of magnesium on, in ethereal solution, A., 461.
- Iodotannic acid**, production of, in dry form, B., 862.
- Ions**, radii of, in saturated solutions, A., 901.
 with inert gas configuration, A., 1357.
 potential and concentration changes of, A., 1237.
 counting of, in free atmosphere, A., 279.
 Geiger-Müller tube for, A., 13.
 mobility of, in solvents yielding a similar ion, A., 1236.

Ions, mobility of, effect of water vapour on, in air, A., 406.

change in, with age, A., 889.

collisions of, A., 890.

recombination of, in the arc, A., 1107.

capture of electrons by, A., 139.

distribution of, in gels, A., 306.

exchange of, at surface of colloidal platinum, A., 298.

density of, at polarised electrodes, A., 1207.

partition of, of salt pairs during diffusion, A., 422.

adsorption of, on surface films, A., 421.

velocity of reaction between, A., 573.

effect of neutral salts on velocity of reaction of, A., 175.

aging of, in air and nitrogen, A., 1207.

physiological effect of homologous series of, A., 774.

effect of, on heart, A., 651.

antagonism of, A., 570.

complex, A., 54.

determination of constitution of, in solution, A., 910.

dissolved, conditions in the neighbourhood of, A., 1126.

gaseous, nature and recombination of, A., 1348.

coefficient of recombination of, A., 783.

negative, formation of, from photo-electrons, A., 1347.

in gases, A., 279.

positive, sources of, A., 782.

mixture for emission of, (P.), B., 167.

capture of electrons by, A., 407.

yield of electrons from collisions of, A., 542.

high velocity, use of, A., 14.

unimolecular, mobility of, A., 1107.

Ionisation, formula for, A., 542.

measurement of, A., 405.

for inner levels through corpuscular radiation, A., 891.

in gaseous explosions, A., 688.

Ionone 2,4-dinitrophenylhydrazones, A., 937.

Ipecacuanha preparations, stability of, B., 780, 904.

Ipomæa, resin of, and detection of colophony therein, B., 862.

Ipomæa batatas (sweet potato), silage from tops of, B., 216.

ipomæin from, A., 1342.

Ipomæin from sweet potatoes, A., 1342.

Iridium, quadrivalent reduction potential of, in hydrochloric acid solution, A., 435.

Iridium determination:—

determination of, potentiometrically, A., 590.

Iris germanica, anthocyanin pigments in flower of, A., 1099.

Iron, manufacture of, (P.), B., 26, 119, 120, 352.

pure, (P.), B., 931.

and its alloys, (P.), B., 1144.

from iron carbonyl, (P.), B., 1015.

from its chloride, (P.), B., 638.

from its oxides, (P.), B., 931.

slag problem in open-hearth furnace for, B., 441.

refractory materials for induction furnaces for, B., 633.

slag inclusions in, B., 980.

recovery of, from its ores, (P.), B., 1049.

removal of, from inorganic materials, (P.), B., 724.

from lyes from chlorinated pyrites, (P.), B., 111.

composition for cleaning of, (P.), B., 119.

electrolytic cleaning of, (P.), B., 449.

apparatus for electrodeposition of, (P.), B., 639.

refining of, (P.), B., 119, 398.

desulphurisation of, (P.), B., 255.

magnetic separation of, from foundry sand, (P.), B., 892.

cold-working of, B., 843.

heat-treatment of, (P.), B., 889.

furnaces for, (P.), B., 207.

casting of, (P.), B., 639.

carburisation of, (P.), B., 119.

cementation of, (P.), B., 26.

hardening baths for, (P.), B., 545.

case-hardening of, (P.), B., 68*, 352, 764, 931.

case-carburising of, in fused cyanides, B., 976.

precipitation hardening of, by titanium, B., 886.

container for case-hardening and nitrogenisation of, (P.), B., 301.

and its alloys, nitrogenisation of, B., 297, 546.

range of brittleness of, at low temperatures, A., 292.

pressure-welding of, B., 23.

strength of surface welds in, B., 251.

spectrum of, A., 136, 1344.

K-absorption spectrum of, A., 993.

arc spectrum of, A., 276.

Iron, infra-red spectrum of, A., 404.

pure, X-ray structure of, A., 1358.

change in resistance of, in magnetic fields, A., 29.

Hall effect of, A., 672.

effect of pressure on critical temperature of magnetisation for, A., 1116.

magnetisation-temperature curves of, A., 790.

and its alloys with nickel, magnetic anisotropy of, A., 1114.

electric glow emission of, A., 1220.

atomic scattering powers of, A., 3.

Barkhausen effect for, A., 28, 1220.

cathodic sputtering of, in nitrogen, A., 810.

effect of adsorbed potassium ions on photo-electric threshold of, A., 1106.

removal of β -rays from radiation of, A., 784.

liquid, influence of emissive power on measurement of temperature of, B., 249.

liquid and solid, solubility of carbon in, and effect of alloying metals thereon, B., 927.

adsorption of hydrogen by, A., 1120.

adsorption of nitrogen by, A., 1120.

elastic anisotropy of, A., 898, 1220.

permeability of, A., 790.

diffusion of tin into, and formation of columnar crystals, B., 1053.

solubility of, in acids and in gastric juice, A., 1179.

in molten zinc, B., 976.

role of hydrogen in solution of, A., 1016, 1382.

crystals, magnetostriction in, A., 551, 1360.

magnetic properties of, A., 28, 153.

elasticity of, A., 1220.

equilibrium of, with carbide and oxygen, A., 170.

with carbon and sulphur, B., 807.

and its oxides, with carbon and its oxides, A., 1128.

with carbon and vanadium, B., 807, 808.

with hydrogen and oxygen, A., 41.

with hydrogen and water vapour, A., 567.

with nitrogen, B., 807.

action of sulphur on, with nickel silicate, A., 1235.

with oxygen, A., 1369.

and its compounds, catalytic autoxidation with, A., 177.

optical investigations on passivity of, A., 301.

passive film produced on, anodically, in solutions containing sulphate, A., 1238.

corrosion of, B., 160.

colloid theory of, A., 1133.

film theory of, A., 698.

and its alloys, B., 977.

by alcohols, (P.), B., 255.

by carbon tetrachloride, A., 438.

retardation of, by colloids, A., 575.

role of hydrogen cyanide in, B., 542.

action of oxygen on, B., 351.

by steam, A., 1016.

formation of ferrous ferrite in, A., 693.

protection of, from corrosion, with the Evans pile, B., 762.

by the Parker and Bonderite processes and painting of iron so protected, B., 762.

theory of rusting of, B., 1100.

rust-proofing of, (P.), B., 255, 811, 890, 980.

with cadmium, B., 1014.

comparative efficacy of zinc, cadmium and zinc-copper alloys for, B., 1014.

alcoholic solution non-corrosive to, (P.), B., 73.

and its alloys, protection of, from attack by acids, (P.), B., 724.

protective action of red lead on, B., 298.

coating of, (P.), B., 27.

compositions for, (P.), B., 817.

with aluminium, B., 251.

with aluminium and zinc, (P.), B., 764.

with antimony, (P.), B., 119.

with chromium, (P.), B., 1101.

with lead alloys, (P.), B., 119.

with zinc, (P.), B., 933.

production of copper films on, (P.), B., 163.

formation of lime-rust-protecting coating on, B., 204.

galvanisation of, (P.), B., 27.

hot galvanising of, with cadmium and zinc, B., 445.

and its alloys, pickling baths for, B., 301.

inhibitors for pickling baths for, (P.), B., 119, 301, 546, 931.

Iron, etching figures in, B., 25.
 precipitation of, from solution as sulphides, (P.), B., 924.
 helium content of, A., 327.
 action of, on alkali salts, A., 443.
 effect of moist lithopone on, B., 204.
 pure, influence of oxygen and sulphur on, B., 590.
 uniting of, with other elements, (P.), B., 448.
 uniting other metals and, without fusion, (P.), B., 932.
 treatment of, for production of apparatus, (P.), B., 165*.
 used in cement manufacture, B., 22.
 transformations of, in nature, A., 1193.
 distribution of, in plants in relation to pH of tissue fluids, A., 775.
 in growth and nutrition, A., 1326.
 requirements of, for children, A., 516.
 orally-administered, effect of, in the organism, A., 982.
 intraperitoneal injection of, A., 976.
 in blood, A., 1440.
 resorption of, in the body, A., 869.
 content of, of liver and spleen, A., 857.
 in tissues, A., 861.
 metabolism of. See under Metabolism.
 Iron, active, A., 439.
 benzidine reaction for, A., 57.
 cast, (P.), B., 353.
 structure and mechanical properties of, B., 976.
 manufacture of, (P.), B., 119, 163, 931.
 alloy for, (P.), B., 846.
 desulphurisation of, (P.), B., 810.
 treatment of, (P.), B., 119, 548*.
 heat treatment of, (P.), B., 301.
 and its alloys, B., 1097.
 growth of, under tension, B., 1097.
 Stein-Brackelsberg furnace for melting of, B., 927.
 hardening of, (P.), B., 255.
 loss of carbon during malleabilising of, B., 115.
 formation of graphite in, B., 250, 886.
 influence of cooling velocity and melting temperature on graphitisation of, B., 761.
 effects of nickel, molybdenum and vanadium on, B., 250.
 phosphide eutectic in, B., 542.
 effects of sulphur in, and its removal, B., 885.
 resistant to scaling, (P.), B., 638.
 manufacture of stainless articles of, (P.), B., 545.
 testing of, B., 976.
 in Czechoslovakia, B., 979.
 grey, production of, (P.), B., 889.
 influence of melting conditions on, B., 23.
 annealing of, (P.), B., 846.
 effect of carbon and silicon on growth and scaling of, B., 635.
 austenitic, properties of, B., 843.
 high-test, Detroit rocking electric furnace for, B., 165.
 heat- and acid-resistant, B., 66.
 high-test, production of, B., 160.
 low-carbon, mechanical properties of, B., 1142.
 malleable, manufacture of, B., 1052.
 whiteheart, effect of nickel and silicon on, B., 67.
 determination of phosphorus in, B., 297, 845.
 determination of sulphur in, B., 928.
 cast and wrought, economics of smelting and remelting processes for production of, B., 761.
 commercial, nitrogen in, B., 250.
 cupriferous, manufacture of, from slag, B., 113.
 electrolytic, manufacture of, (P.), B., 256.
 change of resistance of, in transverse magnetic fields, A., 1552.
 hydrogenised, molecular field and atomic order in, A., 154.
 thermal energy of, A., 899.
 magnetic, production of, (P.), B., 724.
 malleable, production of castings of, (P.), B., 682.
 passive, potential of, A., 312.
 pig, production of, B., 975.
 purification of, (P.), B., 165*.
 decarbonisation and desulphurisation of, with hydrogen, B., 927.
 malleable, low-carbon, production of, (P.), B., 573.
 analysis of, B., 442.
 powdered, and its alloys, manufacture of, for magnetic cores, (P.), B., 300.
 sintering of, by heat and pressure, A., 1220.
 manufacture of shaped articles from, (P.), B., 931.

Iron, scrap, utilisation of, by welding, (P.), B., 1058.
 sheet, manufacture and treatment of, for motor bodies, B., 203.
 heat treatment of, (P.), B., 931.
 scaling of, B., 25.
 sponge, manufacture of, (P.), B., 255, 300, 724, 889.
 from its ores, (P.), B., 447, 496.
 stainless, manufacture of, (P.), B., 724.
 wrought, manufacture of, (P.), B., 496.
 slags for, (P.), B., 26.
 effect of low temperature on shock-resistance of chains of, B., 975.
 Aston, comparison of, with natural wrought iron, B., 1097.
 Iron alloys, A., 32, 158.
 manufacture of, from pulverulent materials, (P.), B., 764.
 prevention of corrosion of, B., 809.
 determination of resistance to corrosion of, (P.), B., 120.
 effect of nickel on transformation of, B., 351.
 removal of traces of oxygen from, (P.), B., 207.
 acid-proof, (P.), B., 497.
 cast, (P.), B., 255, 448.
 corrosion-resistant, production of, (P.), B., 890.
 ferrous, manufacture of articles from, (P.), B., 682.
 low-carbon, containing silicon, production of, (P.), B., 163.
 containing nitrogen, effect of cold-work and ageing on, B., 886.
 rustless, manufacture of, (P.), B., 931.
 determination of nitrogen in, B., 887.
 Iron alloys with aluminium, manufacture of furnace parts from, (P.), B., 546.
 production of castings of, (P.), B., 120.
 with aluminium and carbon, B., 203.
 with aluminium, copper and silicon, (P.), B., 448.
 with aluminium and silicon, A., 158 ; B., 929.
 with beryllium, B., 845.
 with carbon, A., 296.
 effect of speed of cooling on, B., 542.
 equilibrium of, with carbon monoxide and dioxide, A., 41.
 action of molecular nitrogen on, B., 1052.
 effect of silicon and manganese on, B., 251.
 with carbon and silicon, A., 418, 557.
 with carbon and tungsten, A., 557, 1117.
 with chromium, X-ray examination and magnetic tests on, B., 1013.
 electrodeposition of, B., 118.
 magnetic and electrical properties of, B., 122.
 pickling of, (P.), B., 255.
 heat-stable, production of, (P.), B., 120.
 malleable, manufacture of, (P.), B., 353.
 scale resistant, (P.), B., 120.
 tin-coated, (P.), B., 353.
 with chromium and nickel, corrosion of, A., 575.
 corrosion-resistant, (P.), B., 980.
 with cobalt and nickel, thermal expansion of, A., 1004.
 magnetic, (P.), B., 353, 638, 932.
 sulphur-resisting, (P.), B., 353.
 with copper and silicon, manufacture of, (P.), B., 353.
 with manganese, A., 296.
 working of, (P.), B., 811.
 with nickel, (P.), B., 120, 165*.
 electrodeposition of, from cyanide solutions, B., 161.
 hydrogen and oxygen overvoltages on, A., 1238.
 δ - and α -fields in, B., 927.
 A3 points of, A., 159.
 ballistic measurements of, B., 845.
 and their use in instrument construction, A., 816.
 for loading coils, manufacture of, (P.), B., 546.
 magnetic, (P.), B., 724, 889, 891*, 1058.
 manufacture of, (P.), B., 26, 764.
 for transformer cores, (P.), B., 811.
 metastable, B., 886.
 with nickel and chromium, B., 637.
 with nickel and with silicon, production of, (P.), B., 120.
 with tin, constitution of, B., 1053.
 with titanium, (P.), B., 889.
 with vanadium and carbon, equilibrium diagram of, A., 297.
 See also :—
 Ferrochromium, Ferromolybdenum, Ferrophosphorus, Ferro-silicon, Ferrotitanium, Ferrotungsten, Ferrovandium.

Iron alloys:—

Steel, fibrous structure of, and its mechanical properties, B., 808.
 X-ray study of grain-size of, B., 251.
 manufacture of, (P.), B., 26, 249, 352, 810, 1101.
 research on, B., 442.
 in coreless induction furnaces, B., 761, 814.
 open-hearth furnaces for, (P.), B., 447.
 use of pig-iron in open-hearth process for, B., 23.
 metallurgy of tilting furnaces in, B., 297.
 physical chemistry of, B., 115.
 distribution of alloying elements in, B., 927.
 equilibria between steel bath and slag in, B., 927.
 chemical reactions in acid process for, and its deoxidation, B., 442.
 cementite in, B., 442.
 composition for cleaning of, (P.), B., 119.
 electrolytic cleaning of, (P.), B., 449.
 refining of, (P.), B., 119.
 decarbonisation and desulphurisation of, with hydrogen, B., 927.
 application of ultra-violet microscopy to, B., 976.
 hair-line cracks in, B., 442.
 slag inclusions in, B., 980.
 heat treatment of, (P.), B., 638, 846, 889.
 oils for use in, B., 1097.
 salt-bath furnaces for, (P.), B., 811, 980.
 heating of, in ladles, (P.), B., 255.
 annealing of, (P.), B., 163.
 carburisation of, (P.), B., 119.
 oil as carburising medium for, B., 1097.
 case-carburising of, in fused cyanides, B., 976.
 decarburisation of, at heat-treating temperatures, B., 636.
 effect of surface decarburisation on fatigue properties of, B., 1098.
 casting of, (P.), B., 352.
 cementation of, (P.), B., 26.
 graphitisation of, at low temperatures, B., 844.
 hardening of, B., 203.
 baths for, (P.), B., 545.
 cyanide pot for, (P.), B., 163.
 cyanide furnace for, B., 441.
 case-hardening of, B., 886; (P.), B., 68*, 352.
 container for case-hardening and nitrogenisation of, (P.), B., 301.
 influence of metallic coatings on nitridation of, B., 543.
 nitrogenisation of, (P.), B., 546.
 dilatometric study of quenching of, B., 808.
 quenching of, in solutions of ethylene glycol, glycerin, and sodium silicate, B., 1098.
 equilibrium of smelting of, B., 493.
 welding of, (P.), B., 932.
 powder for, for cutting tools, etc., (P.), B., 932.
 autogenous welding of, B., 443.
 flux for welding of copper and, (P.), B., 847.
 strength of surface welds in, B., 251.
 joining of aluminium-zinc alloys to, (P.), B., 890.
 determination of creep limit of, B., 443, 976.
 notched-bar impact test on, B., 976, 977, 979.
 detection of internal stresses in, B., 1098.
 effect of surface conditions on resistance of, to repeated stresses, B., 206.
 volume changes of, under stress, B., 443.
 tensile strength of, at high temperatures, B., 680.
 vibration fatigue strength of, B., 442.
 relation between magnetic induction and composition of, B., 814.
 hot-shortness of, produced by contact with metals, B., 808.
 molten, "over-reduced" condition in, B., 67.
 optical investigations on passivity of, A., 301.
 corrosion of, in soils, B., 680.
 colloid theory of, A., 1133.
 action of oxygen on, B., 351.
 corrosion rate of, B., 116.
 in oxygenated water, B., 1099.
 protection of, from atmospheric corrosion, B., 682.
 products of corrosion of, in oxygenated water, B., 722.
 rust-proofing of, (P.), B., 255, 811.
 coating of, with zinc and aluminium, (P.), B., 764.
 antimony coating of, (P.), B., 119.

Iron alloys:—

Steel, production of copper films on, (P.), B., 163.
 hot galvanising of, with cadmium and zinc, B., 445.
 plating on radiator shells of, B., 161.
 pickling of, purification of acid waste from, (P.), B., 971.
 composition for, (P.), B., 352.
 solution of scale in, B., 116.
 inhibitor for, (P.), B., 255.
 pickling baths for, and their inhibitors, (P.), B., 26, 119, 163, 301, 546, 931.
 effect of nitrogen on, B., 1098.
 reduction of non-metallic inclusions in, by addition of zirconium, B., 1099.
 etching figures in, B., 25.
 treatment of, prior to painting, (P.), B., 638.
 and its alloys, for specific industrial uses, B., 1101.
 used in cement manufacture, B., 22.
 with good machining properties, manufacture of, (P.), B., 207, 301.
 for permanent magnets, (P.), B., 301.
 for oil-well pump sucker rods, (P.), B., 163.
 manufacture of pressure receptacles, etc. of, (P.), B., 255.
 life of cutting tools operating at constant depth of cut on, B., 844.
 micro-analysis of, B., 67.
 detection of nickel and cobalt in, B., 762.
 detection of sulphur in sections of, by the impression method, B., 680.
 determination of beryllium in, B., 845.
 determination of chromium in, electrometrically, B., 24.
 determination of traces of chromium in, B., 297.
 determination of copper in, electrolytically, B., 637.
 determination of manganese in, B., 297.
 determination of molybdenum in, B., 297, 762.
 determination of nitrogen in, B., 887.
 determination of oxygen in, B., 24.
 determination of phosphorus in, B., 297, 845, 928.
 determination of silicon in, B., 24.
 determination of silver in, B., 543.
 determination of sulphur in, A., 586; B., 762, 844.
 determination of vanadium in, iodometrically, B., 443.
 potentiometrically, B., 528.
 apparatus for works determination of total zinc coating on, B., 543.
 determination of zirconium in, B., 298.
 Steel, alloy, (P.), B., 120, 301, 448, 546, 1101.
 manufacture of, (P.), B., 724.
 tensile properties of, at high temperatures, B., 443.
 rolling of, (P.), B., 811.
 manufacture of chemical-resistant articles from, (P.), B., 1058.
 of high permanent strength, (P.), B., 810.
 for rails, (P.), B., 546.
 containing copper, nickel, and silicon, (P.), B., 1101.
 mild and high-tensile, relative safeties of, under alternating and pulsating stresses, B., 1057.
 nitrogenised, heat-treatment of articles of, (P.), B., 120.
 special low-carbon, (P.), B., 546.
 stable surface, (P.), B., 163, 255, 847.
 high speed tool, (P.), B., 26.
 determination of phosphorus in, B., 845.
 determination of sulphur in, B., 928.
 aluminium, stability of, at high temperatures, B., 251.
 nitrogenised, (P.), B., 120.
 aluminium-chromium-molybdenum, surface hardening of, by nitrogen, B., 1013.
 austenitic, non-corrodible, (P.), B., 724.
 boiler-plate, tensile properties of, at high temperature, B., 251.
 bullet-proof, production of, (P.), B., 889.
 carbon, decarburisation of, in fused salt baths, B., 809.
 effect of grain size of iron carbide on hardness of, B., 251.
 mechanism of nodular troostite formation in, B., 808.
 resistance to wear of, B., 1098.
 containing manganese, effect of molybdenum on, B., 1013.
 hardened, ageing of, B., 886.
 quenched, tempering of, B., 1098.
 low-carbon cold-worked, effect of annealing temperature on, B., 398.
 carbon-chromium-nickel, heat-treatment of, (P.), B., 1101.

Iron alloys:—

Steel, cast, relation between Barkhausen effect and intensity of magnetisation of, A., 1220.
 “degassed” and “gassy,” properties of, B., 809.
chromium, manufacture of, (P.), B., 255.
 use of converted slags in, (P.), B., 300.
 properties of, B., 24.
 heat-treatment of, (P.), B., 163.
 influence of carbon on, B., 543.
 resistance of, to alkali solutions, B., 680.
 for boiler tubes, (P.), B., 764.
 use of, in nitric acid plant, B., 116.
 use of vessels of, in analysis, A., 1264.
 effect of temperature on solubility of, in milk, B., 495.
 low-carbon, manufacture of, (P.), B., 810.
high-chromium, transformation and constitution of, B., 67.
chromium alloy, (P.), B., 353.
chromium-copper, for structural work, B., 115.
chromium-manganese, (P.), B., 256.
 nitrogen case-hardening of, (P.), B., 546.
chromium-nickel, (P.), B., 25, 256, 448.
cobalt, tool, high-speed, (P.), B., 889.
 determination of manganese in, B., 1053.
cobalt-nickel, (P.), B., 1102.
 constructional, improvement of, B., 591.
 German St. 52, endurance limit of, B., 976.
copper, mechanism of corrosion of, B., 204.
copper-nickel, resistance of, to sea-water, B., 637.
corrosion- and rust-resistant, (P.), B., 931.
hardened, crystal structure of, B., 636.
 martensite structure of, B., 808.
 heat treatment of, (P.), B., 163.
 carbon content of γ -phase of, B., 808.
hardened and tempered, etching of, and in relation to mechanism of tempering, B., 808.
high-speed, tempered, reheating of, B., 493.
 determination of vanadium in, B., 1054.
hypo-eutectoid, hot-worked, origin of banded structure of, B., 1053.
manganese, heat-treatment of, (P.), B., 207.
 heat-treatment of cold-shaped articles of, (P.), B., 811.
 working of alloys containing, (P.), B., 811.
 quenched, microstructure and hardness of, B., 543.
low-manganese, effect of zirconium on ductility, etc. of, B., 680.
mild, yield point and stages of plastic strain in, B., 721.
 accelerated cracking of, under repeated bending, B., 636.
 attack of, during hot-galvanising, B., 1013.
 effect of arsenic on, B., 493.
mild ingot, sensitivity of, to overheating, B., 442.
nickel, X-ray investigation of, B., 636.
 influence of corrosion on fatigue of notched specimens of, B., 1098.
 influence of silicon on, B., 1013.
open-hearth, manufacture of, (P.), B., 931, 980.
pre-Roman, examination of, B., 251.
quenched, X-ray analysis of cementite in, B., 808.
 determination of austenite in, B., 1053.
 determination of austenite and martensite in, by means of X-rays, B., 1053.
rail, (P.), B., 301.
rolled, soft, malleability of, B., 67.
non-rusting, manufacture and properties of, B., 251.
 welding rods for, (P.), B., 26.
 pearlitic, B., 23.
semi-, low-carbon, production of, B., 1052.
sheet, production of, B., 115.
 manufacture and treatment of, for motor bodies, B., 203.
 heat-treatment of, (P.), B., 931.
 furnaces for, (P.), B., 931.
 rolling and annealing of, (P.), B., 810.
 effect of rolling treatment on structure and properties of, B., 761.
 galvanised, analysis of coating of, B., 722.
 determination of iron in coating of, B., 722.
silicon, (P.), B., 1058.
 manufacture of, (P.), B., 301.
 equilibrium of, A., 557.
 increasing permeability of, (P.), B., 163.

Iron alloys:—

Steel, soft, effects of cold-working, tempering, and overheating on grain size and fatigue-resistance in, B., 844.
 tempering and ageing of, B., 843.
 deposited in electric arc, B., 493.
 spring, fatigue-resistance of, B., 1053.
 special, quenched, tempering of, B., 23.
stainless, manufacture of, (P.), B., 724.
 sand-moulds for coating of, (P.), B., 29.
 electrode properties of, A., 172.
high-sulphur, determination of carbon in, B., 203.
titanium, (P.), B., 26.
 tool, hot-hardness of, B., 251.
 failures of, B., 1098.
 high-speed, heat treatment of, (P.), B., 163.
 cobalt high-speed, (P.), B., 448.
tungsten, transformation and constitution of, A., 557.
Steel articles, manufacture of, (P.), B., 352.
 case-hardened in ammonia, (P.), B., 398.
 rust-proofing of, (P.), B., 763, 764.
 inhibitor for pickling of, (P.), B., 638.
 protective coatings for prevention of corrosion in storage of, B., 977.
 enamel coatings for, (P.), B., 545.
 coating of, with nickel-chromium, (P.), B., 725*.
 alloy, nitrogenising of, (P.), B., 301.
 coated, production of, (P.), B., 27.
 hardened, manufacture of, (P.), B., 27.
ingots, solidification and crystallisation of, B., 1012.
 casting of, (P.), B., 593.
 plates, corrosion of, in sea water, B., 806.
 tubes for high temperatures, (P.), B., 1015.
 wire, electrolytic cleaning of, prior to galvanising, (P.), B., 725.
 coating of, with copper, (P.), B., 1101.
 works, fuel economy in, B., 635.
 production economy in, B., 635.
 tests on refractories in, B., 677.
 production of coal-gas in, B., 617.
 English, possibilities of use of basic Bessemer process in, B., 635.
 potentiometric analysis in laboratories of, B., 928.
Iron compounds, production of, and chlorine, (P.), B., 393.
 induced oxidation with, A., 1017.
 action of, on oxygen consumption of living cells, A., 1187.
 pharmacology of, A., 1188.
Iron salts, complex, absorption spectra of, A., 891.
 potentiometric studies of, A., 687.
Iron boride, crystal structure of, A., 151, 896.
 boride, nitride, and phosphide, crystal structure of, A., 415.
 trifluoride, crystal structure of, A., 1359.
 nitride, atomic hydrogen occluded in, A., 53, 1252.
 nitrides, equilibria of formation of, A., 799.
 nitrosulphides, magnetic susceptibility, absorption spectra, and structure of, A., 1000.
 nitrosyls, formation and autoxidation of, A., 449.
 peroxide, Manchot's theory of formation of, A., 1261.
 oxides, magnetism and conductivity of, A., 673.
 hydrates of, A., 53.
 equilibria of, A., 1369.
 equilibrium of magnesium oxide and, A., 310.
 reduction of, by carbon, A., 584; B., 802.
 by hydrogen and charcoal, A., 53.
 reactions of, with calcium, iron and manganese sulphides, A., 584.
 red, B., 169.
 phosphates, high acid, manufacture of, (P.), B., 247.
 silicide, crystal structure of, A., 549.
 titanates, A., 584.
Ferric ions, and their complexes, detection of, A., 589.
Ferric salts, hydrolysis of, A., 1241.
 photochemical reduction of, in tri-iodide solution, A., 1250.
 reaction of iodine with, A., 573.
 neutral salt effect of reaction of iodides with, A., 802.
Ferric chloride, solubility of, in ethyl alcohol, A., 558.
 formation of mixed crystals of, with strontium and zinc chlorides, A., 901.
 photo-reduction of alcoholic solutions of, A., 1378.
 ageing of aqueous solutions of, A., 426.
 and oxide, catalytic hydrogenation of oils with, B., 374.

Iron:—

- Ferric hydroxide, preparation of stable solutions of, (P.), B., 1093.
- gels and sols, surface change in, A., 797.
- sols, formation of, in presence of citric acid, A., 37.
- in presence of polymeric carbohydrates, A., 561.
- kinetics of decomposition of hydrogen peroxide by, A., 1243.
- colloidal, effect of sugars on formation of, A., 304.
- stabilisers of, A., 797.
- natural, dehydration of, A., 1390.
- oxide, production of, (P.), B., 294.
- effect of ignition temperature on properties of, A., 924.
- solid solutions of, with quartz, tridymite or cristobalite, A., 582.
- fusion of, with silicon dioxide, A., 1010.
- equilibrium of, with calcium oxide, A., 1010.
- with cupric oxide, sulphur trioxide, and water, A., 800.
- with sodium silicate and silica, A., 170.
- effect of chromic oxide on catalytic activity of, A., 1134.
- colours from, A., 564.
- peptisation of, by proteins, A., 798.
- gels, surface phenomena of, A., 1229.
- sols, coagulation of, A., 425.
- effect of p_H on flocculation of, A., 304.
- migration studies with, A., 1232.
- compounds of calcium oxide and, A., 1373.
- catalytic, for production of hydrogen, A., 1017.
- colloidal, effect of hydrolysis temperature on, A., 37, 164.
- influence of temperature and concentration on density and viscosity of, A., 304.
- decomposition of hydrogen peroxide solutions by, A., 562.
- ferromagnetic, formation of, A., 324.
- hydrated, magnetic susceptibility of, A., 1000.
- tetrahydrate, crystalline, A., 1255.
- sulphide, equilibrium of, with sulphur and ferrous sulphide, A., 169.
- Ferrous salts, oxidation of, by iodine in presence of phosphate, A., 454.
- catalysis in, A., 575.
- induced reactions with, A., 917.
- Ferrous chloride, absorption spectrum of, A., 545.
- hydroxide, reduction of nitrates by, A., 323.
- nitrate, decomposition of, A., 583.
- oxide, equilibrium of hydration of, and its conversion into hydrated ferric oxide, A., 432.
- equilibrium of, with manganous oxide, A., 1235.
- sulphate, oxidation of, A., 316; B., 717.
- influence of p_H on, A., 584.
- separation of, from copper and zinc sulphates, (P.), B., 538.
- native, composition and genesis of, A., 459.
- sulphide, heat capacity of, at low temperature, A., 552.
- reactions of iron oxides with, A., 584.
- action of sulphurous acid on, A., 1255.
- titanate, decomposition of, B., 1091.
- Iron organic compounds, acid solutions of, A., 891.
- with hydroxy-acids, A., 1022.
- colloidal, A., 1123.
- complex, A., 825.
- pharmaceutical, manufacture of, (P.), B., 45.
- Iron carbonyl, manufacture of, (P.), B., 157.
- detection of, in gasoline, spectrographically, B., 469.
- carbonyl hydride, A., 810.
- tetracarbonyl, crystal structure of, A., 671.
- reactions of, A., 1255.
- diethylaminopentacarbonyl, manufacture of, (P.), B., 538.
- nitrosodithiocarbamates, A., 1382.
- Iron detection, determination and separation:—
- assay of pharmaceutical preparations of, B., 88.
- detection of, A., 1261.
- with thiocyanate, A., 670.
- determination of, A., 702, 814.
- gravimetrically, A., 56.
- micro-volumetrically, with permanganate, A., 1261.
- potentiometrically, A., 1025.
- with ether, A., 188.
- with dropping mercury cathode, A., 1261.
- with potassium dichromate, A., 188.
- in presence of manganese, by hydrazine hydrate, A., 1261.
- in aluminium, B., 68.

Iron detection, determination, and separation:—

- determination of, in biological material, A., 134, 662.
- in blood, A., 974.
- in coating of galvanised steel, B., 722.
- in fabrics, B., 196.
- in iron oxides, A., 1025.
- in ores by a modified Penny's method, B., 975.
- in reduced ores, B., 297.
- in organs and body fluids, A., 778.
- gravimetrically, in organic compounds, A., 589.
- colorimetrically, in red lead, B., 552.
- in silicates, with diphenylamine indicator, A., 328.
- colorimetrically, in titanium pigments, B., 1106.
- in water, B., 320.
- colorimetrically, in drinking water and pharmaceutical preparations, B., 908.
- in wines, B., 40.
- and its alloys, determination of oxygen and nitrogen in, B., 976.
- determination of silicon in, B., 24.
- determination of sulphur in, A., 586; B., 762.
- separation of, from aluminium and titanium, A., 589.
- from lead, A., 1260.
- Iron articles, manufacture of, (P.), B., 352.
- apparatus for electroplating of, (P.), B., 814.
- electroplating of zinc on, (P.), B., 933.
- coating of, with nickel-chromium, (P.), B., 725*.
- enamel coatings for, (P.), B., 545.
- removal of lead coating from, (P.), B., 546.
- rust-proofing of, (P.), B., 763, 764.
- cast, manufacture of, (P.), B., 1058.
- cast alloy, heat treatment of, (P.), B., 353.
- chromium-plated, production of, (P.), B., 548.
- coated, production of, (P.), B., 27.
- Iron castings, classification of, B., 1097.
- production of, from high-carbon alloys, (P.), B., 300.
- Iron electrodes. See under Cathodes and Electrodes.
- Iron implements, ancient Egyptian metallography of, B., 23.
- Iron ions, complex, mobility of, A., 1370.
- Iron materials, soft magnetic, (P.), B., 353.
- Iron minerals, thermomagnetic analysis of, A., 331.
- Iron ores of the Donetz coal basin, A., 1390.
- of Mandi State, A., 1145.
- use of coking coals for recovery of iron from, B., 887.
- smelting of, in the Saar with coke, B., 885.
- interaction between gases and, in the blast furnace, B., 115.
- reduction of, B., 203, 1096; (P.), B., 255, 300, 447, 724.
- furnaces for, (P.), B., 257.
- without melting, (P.), B., 207.
- generation of hydrogen for, (P.), B., 804.
- reduction of carbon dioxide in, (P.), B., 540.
- carbonate, treatment of, by Greenawalt process, B., 23.
- comminuted, manufacture of briquettes of, (P.), B., 1057.
- finely-divided, agglomeration of, (P.), B., 889.
- Missouri, laboratory concentration of, B., 296.
- oxide, molten, reduction of, B., 397.
- Siegerland, agglomeration of fines of, B., 807.
- sulphide, treatment of, (P.), B., 810, 1101.
- containing copper, roasting of, (P.), B., 1102.
- titaniferous, from Madras, A., 1145.
- Iron pipes, corrosion of, in earth, B., 977.
- by soils, B., 887.
- protection of, (P.), B., 545.
- coating of, with refractory materials, (P.), B., 811.
- anti-corrosive properties of protective coatings on, B., 298.
- Iron scale, constitution of, B., 635.
- Iron sheets, formation of hard zinc and iron salts on, during galvanisation, B., 887.
- enamels for, B., 1011.
- phosphatised, acid-resistance of varnishes on, B., 1062.
- Iron valves, lubrication of, to prevent corrosion, B., 978.
- Iron wire, determination of electrical resistance of, A., 153.
- change of resistance of, in magnetic fields, A., 898.
- cleaning of, prior to galvanising, (P.), B., 725.
- apparatus for, (P.), B., 931.
- annealing and zinc-coating of, (P.), B., 547.
- coating of, with copper, (P.), B., 1101.
- repassivated, recovery of, A., 301.
- welding, production of, (P.), B., 352.
- α -Iron, lattice constants of, A., 896.
- Ironworks, Skinningrove, fuel economy at, B., 114.

Irradiation, changes produced by, A., 872.
 metabolism produced by, A., 1330.
 effect of, on sensitivity to poisons, A., 122.
Irvingia robur, oil from seeds of, B., 816.
Isatin, preparation of, from oximinooacetanilide, A., 363.
 thoindigotin from, A., 748.
 1-phenyl and 1-o-tolyl-carbohydrazones, A., 475.
Ishinagi-liver oil, hydrocarbon and its salts from, A., 1442.
Isinglass, swelling and protective action of, B., 902.
Isoelectric point of cells and tissues, A., 380.
Isomerides, superfluous, A., 66, 1036.
Isomerism, *cis-trans*, thermal, kinetics of, A., 1239.
 complex, A., 1114.
 dynamic, A., 87.
 rotation, detection of, A., 1266.
Isomorphism, X-ray investigations of, A., 1217.
 and atomic size, A., 1005.
 and chemical homology, A., 182, 670.
Isoprene, A., 93, 194, 228, 492, 961, 1067.
 dimerisation of, A., 1031.
 polymerisation of, A., 45.
Isoprenesulphones, isomeric, A., 600, 1268.
Isotopes, A., 666.
 prediction of, A., 1108.
 relative abundances of, A., 1207.
 vibrational effect of, A., 1349.
 relation between core moments of elements and, A., 543.
 separation of, by living organisms, A., 280.
 periodic relation of, to atomic weight, A., 995.
 effect of, on band spectra, A., 135.
Itaconic acid, and its anhydride, preparation of, A., 824.
Itaconic acids, tautomerism of, A., 935.
 determination of, bromometrically, A., 935.

J.

Jams, composition of fruit used for, in Great Britain, B., 316.
 determination of soluble solids in, B., 741.
Jasmine, "enfleurage" of, B., 781.
Jasper in Corsica, diffusion of silica in, A., 1029.
Jaundice, bilirubin in serum in, A., 977.
Jellies, manufacture of, (P.), B., 741, 993.
Jewellery, gold alloy for, (P.), B., 813.
Jigs, (P.), B., 424.
Joints, hot, compounds for, (P.), B., 372.
Juglone, detection of, B., 365.
Julienite, A., 817.
Juniperus scopulorum, oils from leaves of, B., 274.
Jute, properties of cellulose nitrate from, B., 197.
 lignin from, B., 1087.
 jute fibres, brightening the colour of, (P.), B., 155.
Jute seeds, constitution of active principle of, A., 337.
 isolation of corchoritini from, A., 1420.

K.

Kaá-hé-ê, sugar of, A., 1100.
Kahn's reaction, A., 1177.
Kaki, removal of astringent from, B., 364.
Kaliophilite, A., 1390.
Kaolin (*kaolinite*), A., 445.
 production of, by fractional precipitation, (P.), B., 492.
 purification of, (P.), B., 842.
 improvement of colour of, (P.), B., 1050.
 study of suspensions of, B., 632.
 cataphoresis of suspensions of, A., 36.
 compounds in mixtures of lime and, B., 1141.
 as raw material for refractories, B., 440.
 Doubrovka, mineral composition of, A., 707.
 Prosymanaya, influence of high temperature on, B., 589.
Kapok oil, effect of, on Halphen test for cottonseed oil, B., 894.
Kapok seed, composition of, B., 982.
Kapok-seed oil, Philippine, composition of, B., 1060.
Katharometer for measurement of respiration, A., 1099.
Kauri, recovery of gum from fossil timber of, B., 451.
Kawa root, constituents of, A., 89.

Kawaic acid. See β -Methoxy- ζ -phenyl- Δ^4 -heptadienoic acid.
Kawain, A., 89.
Kellin, from *Ammi visnaga*, structure of, A., 73.
Kephalin, oxidation and purification of, A., 380.
 from human brain, A., 249, 380.
Kephir. See under Milk, sour.
Keratin, hair, structure, elastic properties and X-ray spectrum of, A., 152.
Keratins, chemical relationship between, A., 1317.
Kerosene, treatment of, (P.), B., 54.
 Californian, cracking of, at low pressures, B., 187.
Kerr constants of liquid and dissolved substances, A., 1214.
Kerr effect, A., 1113, 1355.
 in air, A., 405.
 in dipolar media, A., 669.
Keten, preparation of, A., 937.
Ketimines, aromatic, Hoesch-Houben synthesis of, A., 723.
Ketoximes, hydroxy-, complex salts of, A., 485.
2-Keto-2'-acetoxy-1:2-dihydrodi- α -naphthyl sulphide, 1-nitro-, A., 838.
2-Keto-4-acetoxy-1:2:3:4-tetrahydronaphthalenes, *tetra-* and *hexa-* bromo-, A., 215.
5-Keto-3-acetyl-9-methyldecahydronaphthalene, and its derivatives, A., 1302.
4-Keto-3-allyl-1:2:3:4-tetrahydroquinazoline, 2-thio-, A., 634.
1-Keto-3-*m*-aminophenyl-4-methyltetrahydrophthalazine, A., 1169.
1-Keto-3-*m*-aminophenyltetrahydrophthalazine, A., 1169.
Ketoanilinomethylenecamphor, A., 1300.
8-Keto-1:9-anthra α selenazole-2-carboxylic acid, B., 337.
8-Keto-1:9-anthra α isothiazolecarboxylic acids, B., 337.
8-Keto-1:9-anthra α thiophen-2-carboxylic acid, B., 337.
 ζ -Ketobehenic acid, μ -bromo- and μ -chloro-, A., 65.
4-Keto-1:3-benzodioxin, 6:8-*d*-nitro-, A., 1305.
2-Keto-4:5-benzo-7-phenylaminodihydro-1:3:6-heptathiodiazine, and its methyl derivative, A., 854.
2-Keto-4:5-benzo-7-*p*-tolylaminodihydro-1:3:6-heptathiodiazine, A., 854.
2-Keto-4:5-benzo-7-(1:3:4)-xylylaminodihydro-1:3:6-heptathiodiazine, and its acetyl derivative, A., 854.
3-Keto-1:2-endo-4'-bromo-2'-nitrophenylimino-2:3-dihydro-1:2-benzisodiazole 1-oxide, A., 1416.
3-Keto-1:2-endo-3'-bromo-*o*-tolylimino-2:3-dihydro-1:2-benzisodiazole, and its oxide, and 3:5-*d*-bromo-, oxide of, A., 1416.
 α -Ketobutaldehyde, β -chloro-, *p*-bromophenyl-, *p*-chlorophenyl-, phenyl-, and tolyl-hydrazones, A., 722.
 γ -Ketobutane- $\alpha\alpha\beta$ -tricarboxylic acid, derivatives of, A., 1035.
2-Keto- π -apocamphane-7-carboxylic acid, and its semicarbazone, A., 626.
5-Ketocamphor, labile, A., 358.
*iso*Ketocamphoric acid, dilactone from, A., 626.
Ketocarbazolaeridonylaminomethylenecamphor, A., 1300.
 δ -Ketocarboxylic acids, constitution of, A., 1056.
7-Ketocholanic acid, bromination of, and 6-bromo-, and 6-hydroxy-, A., 841.
3-Keto-7-cholenic acid, chloro-, and its methyl ester, A., 957.
2-Keto-3-cyano-1:4-dimethyl-1:2-dihydropyridine, 6-hydroxy-, A., 1165.
3-Keto-4-oyano-2:3:5:6:7:8-hexahydroisoquinoline, 1-hydroxy-, and its salts, A., 1165.
2-Keto-3-cyano-8-hydroxy-1:2:3:5:6:8-hexahydropyridine, A., 1166.
2-Keto-3-cyano-4-methyl-1:2-dihydropyridine, 6-hydroxy-, A., 1165.
3-Keto-4-cyanomethyl-2:3:5:6:7:8-hexahydroisoquinolines, 1-hydroxy-, A., 1165.
2-Keto-3-cyano-6-methylpiperidine-4(2')-spiro-trans-hexahydrohydriindene, A., 728.
2-Keto-3-cyano-6-phenyl-4-anisyl-1:2-dihydropyridine, A., 1165.
2-Keto-3-cyano-6-phenyl-4-anisyl-1:2:3:4-tetrahydropyridine, A., 1165.
2-Keto-3-cyano-6-phenyl-1:2-dihydropyridine-4-carboxylic acid, and its esters, A., 1165.
2-Keto-3-cyano-*p*-tolylidimethyl-1:2-dihydropyridines, A., 1164.
2-Keto-3-cyano-*p*-tolylmethyl-1:2-dihydropyridines, A., 1164.
6-Ketodeoxybilanic acid, and its trimethyl ester, A., 352.
6-Keto- β -deoxybilanic acids, A., 841.
2-Keto-1:2-dihydrodi- α -naphthyl sulphide, 1-nitro-2'-hydroxy-, and its 2'-methyl ether, and disulphide, A., 838.
3-Keto-4:5-dihydrodi-(1:2)-pyrrole, and its derivatives, A., 366.
5-Keto-4:5-dihydrofuran, A., 1422.

- 2-Keto-1:2-dihydronaphthalenes, *tri*- and *tetra*-bromo-, *di*, *tri*-, and *tetra*-bromo-1-nitro-, and 1-chloro-1-bromo-, A., 215.
- 2-Ketodihydronucidine, 3-bromo-, A., 970.
- 2-Ketodihydropentindole, A., 1306.
- 3-Keto-5:9-dimethyldecahydronaphthalene, derivatives of, A., 1302.
- 2-Keto-4:6-dimethylpiperidine, 3-cyano-6-hydroxy-, A., 1427.
- 5-Keto-1:3-dimethyl-5:6:7:8-tetrahydronaphthalene, and its semicarbazone, A., 80.
- 2-Keto-4:6-dimethyl-2:3:4:5-tetrahydropyridine, 3-cyano-, A., 1427.
- 2-Keto-3:4-dimethyl-1:2:3:4-tetrahydroquinolines, stereoisomeric, A., 98.
- 3-Keto-4:5-diphenyl-2-anisylpyrrolene oxide, A., 103.
- 5-Keto-1:2-diphenyl-4-*o*-nitrobenzylidene-4:5-dihydroglyoxaline, A., 743.
- β -Keto-esters, enolic sodium derivatives, partition principle applied to structure of, A., 1035.
- 2-Keto-6-ethoxy-3:5-dimethylpyrimidine, A., 100.
- 2-Keto-6-ethoxy-5-methyl-3-ethylpyrimidine, A., 100.
- 5-Keto-2-ethylpyrrolidine, and its salts, A., 943.
- 2-Keto-3-ethyltetrahydrofuran-4-carboxylic acid, A., 962.
- α -Keto-*trans*-hexahydrohydrindene-2:2-diacetic acid, and its derivatives, A., 728.
- 2-Keto-1:2:3:4:6:7-hexahydronaphthalene, 1:1:3:4:6:7-hexabromo-, A., 216.
- δ -Keto-*n*-hexoic acid, behaviour of, in the perfused liver, A., 257.
- γ -Keto-*n*-hexoic acid, phenylhydrazone of, A., 943.
- 1-Ketohydrindene-3-acetic acid, ethyl ester, A., 1055.
- 6-Keto-5-hydroxydeoxybilianic acid, and its derivatives, A., 352.
- 2-Keto-3-hydroxydihydronucidine, and its salts and derivatives, A., 970.
- α -Keto- δ -dihydroxy-*n*-hexolactone, derivatives of, A., 1402.
- 5-Keto-2-hydroxymethyl-2:5-dihydrofuran, A., 1422.
- 5-Keto-4-hydroxy-2-methyl-4:5-dihydrofuran, and its phenylhydrazone phenylhydrazone, A., 1422.
- 2-Keto-2':3'-dihydroxynucidine, A., 1312.
- 2-Keto-3-hydroxynucine hydrate, reduction of, catalytically, A., 970.
- 2-Keto-6-methoxy-3:5-dimethylpyrimidine, A., 100.
- 2-Keto-6-methoxy-3-tetra-acetylglucosidopyrimidine, A., 100.
- 2-Keto-1-methyl-1:2-dihydronaphthalene, 1:4:6-*tribromo*-, A., 216.
- 2-Keto-1-methyl-2:3-dihydronaphthindole-4:9-quinone-3-carboxylic acid, ethyl ester, A., 363.
- 5-Keto-3-methyl-2:5-dihydro-1:2:4-triazole, derivatives of, A., 496.
- 4-Keto-6-methyl-2:3-cycloethyleneiminotetrahydropyrimidine, and its picrate, A., 1074.
- β -3-Keto-1-methylcyclohexane-1-propionic acid, and its derivatives, A., 734.
- 1-Keto-3-methylhydrindene, 3-hydroxy-, A., 355.
- 5-Keto-9-methyl-3- β -hydroxyisopropyldecahydronaphthalene, and its derivatives, A., 1302.
- 3-Keto-1-methylindene, A., 355.
- 3-Keto-1-methyl-3:4:5:6:7:8:9:10-octahydroisoquinoline, 4-cyano-, and its *N*-methyl ether, A., 1427.
- 4-Keto-2-methyltetrahydroquinazoline, 3-amino-, benzoyl derivative, A., 1074.
- α -Ketomyristic acid, and its sodium salt and derivatives, A., 1061.
- Keto- β -naphthylaminomethylenecamphor, A., 1300.
- Ketone, $C_6H_2O_3N_2$, from acetylene and nitric acid, A., 968.
- C_2H_3O , and its hydrazone, from oxidation of α -amyrin, A., 624.
- $C_{22}H_{26}O_7$, from oxidation of β -dihydrodrotubaic acid, A., 491.
- Ketones, relation of structure of, to their reactivity and affinity in acetal formation, A., 605.
- attempted preparation of, from paraffins, A., 1398.
- and their derivatives, from petroleum, A., 1397.
- manufacture of, (P.), B., 334, 666.
- from acetylene, alcohols, etc., (P.), B., 620, 621.
- from aliphatic acids, (P.), B., 917.
- from organic acids, (P.), B., 621.
- from alcohols, etc., (P.), B., 753.
- from secondary alcohols, (P.), B., 834.
- action of high-speed cathode rays on, A., 1379.
- enolisation of, A., 465.
- action of acid catalysts on, A., 438.
- catalytic reduction of mixtures of, with *p*-nitro- and *p*-nitrosophenols, A., 837, 1047.
- action of iodine in alkaline solution on, A., 825.
- decomposition of, in presence of silica gel, A., 336.
- reaction of, with α -chloro-esters, A., 844.
- Ketones, condensation of, A., 713, 714.
- in presence of hydrochloric acid, under pressure, A., 1418.
- with aliphatic esters, A., 605.
- with ethyl chloroacetate, A., 604, 1415.
- with formaldehyde, A., 741.
- with resorcinol, A., 627.
- condensation of mixtures of aldehydes and, in presence of aluminium hydroxide, A., 630.
- polymerisation of condensation products of formaldehyde and, (P.), B., 621.
- manufacture of non-resinous condensation products of formaldehyde and, (P.), B., 917.
- reactions of *o*-derivatives of, A., 1037.
- reaction of phenylhydrazones of, with diazonium salts, A., 476.
- Ketones, acetylenic, condensation of, with cyanoacetamide, A., 235.
- aliphatic, manufacture of, (P.), B., 237, 1132.
- aliphatic-aromatic, *omega*-dihalides of, A., 91.
- aromatic, manufacture of, (P.), B., 917.
- reduction of, by magnesium triphenylmethyl bromide, A., 1058.
- cyclic, A., 1057.
- manufacture of, (P.), B., 476.
- non-saturated, preparation of, (P.), B., 290.
- phenolic, syntheses of, A., 92.
- unsaturated, formation of, from substituted aminomethylene ketones, A., 1398.
- manufacture of polymers of, (P.), B., 12.
- $\alpha\beta$ -unsaturated, A., 731.
- autoxidation of, A., 1299, 1421.
- condensation of, with cyanoacetamide, A., 1427.
- oximes of, and the Beckmann rearrangement, A., 621.
- hydrogenation of stereoisomeric oximes of, A., 223.
- determination of, volumetrically, A., 752.
- with hydroxylamino, B., 416.
- Ketones, α -halogeno-, replacement of halogen by hydrogen in, by Grignard reagent, A., 199.
- hydroxy-, aromatic, synthesis of, A., 224.
- oximino-, effect of hydrogen chloride on hydrogenation of, A., 1057.
- α -oximino-, configurations of, A., 1157.
- thio-, aromatic, A., 223.
- Ketone groups, absorption and reactivity of, A., 465.
- Ketonic acids, thio-, esters of, A., 1398.
- β -Ketonic acids, esters, alcoholysis of, A., 69.
- Ketonic substances, biological formation of, A., 648.
- effect of sodium hydrogen carbonate on excretion of, A., 116.
- Ketonitriles, A., 91.
- γ -Ketonitriles, hydrolysis of, A., 726.
- Keto-*p*-nitroanilinomethylenecamphor, A., 1300.
- 5-Keto-1-*p*-nitrophenyl-3-methyl-4:5-dihydro-1:2:4-triazole, and its quinazoline derivative, A., 496.
- Ketononoic acid, *di*bromo-, methyl ester, A., 65.
- 2-Ketonucidine-3-acetic acid, and its perchlorate, A., 1434.
- 1-Keto-octahydropyridocoline, and its derivatives, A., 499.
- 1-Keto-octahydropyridocoline-2-carboxylic acid, ethyl ester, A., 499.
- 1-Keto-2-oximinohydrindene-3-acetic acid, and its derivatives, A., 1055.
- γ -Ketopentadecic acid, A., 1094.
- 1-Ketocyclopentyl-2-succinic acid, and its anhydride, A., 957.
- Ketophenmorpholines, syntheses of, A., 747.
- 4-Keto-3-phenyl-1-methyl-3:4-dihydro-2:3:5-naphthtriazine, A., 1310.
- 6-Ketophenylmethyl-dihydropyridines, salts of, A., 494.
- 5-Keto-1-phenyl-3-methyl-4:5-dihydro-1:2:4-triazole, A., 496.
- 2-Keto-6-phenyl-4-methylpiperidine, 3-cyano-5-hydroxy-, A., 1427.
- 2-Keto-6-phenyl-4-methyl-2:3:4:5-tetrahydropyridine, 3-cyano-, A., 1427.
- 4-Keto-2-phenyl-1:2:3:4-tetrahydronaphthyl-1-acetic acid, and its semicarbazone, A., 1407.
- 4-Keto-3-phenyl-1:2:3:4-tetrahydroquinazoline, 2-thio-, and its disulphide, A., 634.
- 3-Keto-1-phenyl-1:2:3:4-tetrahydro-1:2:4:5-tetrazine, 6-thiol-, A., 475.
- 5-Keto-2-phenyl-1-tolyl-4-piperonylidene-4:5-dihydroglyoxalines, A., 743.
- Ketostearic acid, *o*-bromo- and *o*-chloro-, A., 65.
- 2-Keto-2:3:4:5-tetrahydrohomo-3-carboline, A., 363.

- 1-Ketotetrahydronaphthalene, 2-hydroxy-, autoxidation of, A., 969.
- 1-Keto-1:2:3:4-tetrahydronaphthalene-4-acetic acid, A., 620.
- 4-Keto-1:2:3:4-tetrahydronaphthalene-1-acetic acid, and its semi-carbazone, A., 1055.
- β -(1-Keto-1:2:3:4-tetrahydronaphthyl-4)propionic acid, and its methyl ester, A., 620.
- 8-Keto-5:6:7:8-tetrahydropyrrrocoline, and its derivatives, A., 366.
- Ketothiocyanates, A., 91.
- Keto-*p*-toluidinomethylencamphor, A., 1300.
- 2-Keto-6-*p*-tolyl-4-methyl-1:2-dihydropyridine, A., 1165.
- 2-Keto-6-*p*-tolyl-4-methylpiperidine, 3-cyano-6-hydroxy-, A., 1427.
- 2-Keto-6-*p*-tolyl-4-methyl-2:3:4:5-tetrahydropyridine, 3-cyano-, A., 1427.
- 4-Keto-3-tolyl-1:2:3:4-tetrahydroquinazolines, 2-thio-, and their disulphide, A., 634.
- β -Keto- α - γ -triethyl- η -hexoic acid, ethyl ester, A., 205.
- 2-Keto-4:5: ω -trimethoxy-6-methyltetrahydro-1:3-oxazines, A., 1403.
- 6-Keto-1:2:4-trimethyl-5-benzeneazomethylene-1:4:5:6-tetrahydropyrazine, and its hydriodide, A., 367.
- Ketotrimethylmethylenepyrazine, azo-compounds from, A., 367.
- 2-Keto-4:4:6-trimethylpiperidine, 3-cyano-6-hydroxy-, A., 1427.
- 1-Keto-2:3:5-trimethyl-1:2:3:4-tetrahydronaphthalene, A., 948.
- 5-Keto-1:3:8-trimethyl-5:6:7:8-tetrahydronaphthalene, and its semi-carbazone, A., 80.
- 2-Keto-4:4:6-trimethyl-2:3:4:5-tetrahydropyridine, 3-cyano-, A., 1427.
- 6-Keto-1:2:4-trimethyl-5-*p*-tolnenezomethylene-1:4:5:6-tetrahydropyrazine, and its salts, A., 367.
- 1-Ketoundecic acid, *kkk*-trichloro-, A., 65.
- γ -Ketovaleric acid, $\alpha\delta$ -diamino-, dihydrochloride of, A., 238.
- Ketoximes, and their phenylcarbamido-derivatives, A., 844.
- unsaturated, rearrangement of, A., 223.
- ϵ -Keto- ϵ -*p*-xylylpentane- β - γ -dicarboxylic acid, and its diketone derivative, A., 80.
- Ketoyohyrine, A., 369, 750.
- Khellidin, A., 885.
- Khellinin, A., 885.
- Kidneys, factors determining weight of, A., 761.
- influence of aluminium salts on respiration of, A., 982.
- formation of ammonia in, A., 256.
- glucose threshold in, A., 387.
- influence of poisonous gases on pigment excretion of, A., 1187.
- metabolism of, A., 980.
- cat's, fatty acids of, A., 507.
- frog's, formation of urine in, A., 112.
- Kieselguhr, determination of particle size of, A., 796.
- revivification of, (P.), B., 632.
- Kilns, charging of, (P.), B., 951.
- for bricks, (P.), B., 1141.
- for burning of spalls, (P.), B., 759.
- for drying timber, (P.), B., 542.
- for steam-cooking of foods, (P.), B., 88.
- calcining, operation of, (P.), B., 249.
- ceramic, heat balance of, B., 440.
- continuous, in the pottery industry, B., 676.
- for burning of clay products, B., 676.
- down-draught periodic, use of carbon dioxide meter on, B., 248.
- electric, (P.), B., 159.
- gas-fired, burners for, (P.), B., 1085.
- mechanical, ore-roasting, (P.), B., 256*.
- recuperative, B., 702.
- rotary, (P.), B., 422, 517, 1029.
- feeding of materials to, (P.), B., 702.
- coolers for, (P.), B., 1077.
- in cement manufacture, B., 22; (P.), B., 66, 590, 679.
- for cement, lime, etc., (P.), B., 396.
- for burning cement, ores, etc., (P.), B., 843.
- for low-temperature carbonisation, (P.), B., 1077.
- round, porcelain, firing of, with coal gas, B., 247.
- tunnel, (P.), B., 22, 277, 701, 865.
- application of down-draught principle to, B., 1011.
- drying in, (P.), B., 322.
- for activating charcoal, (P.), B., 525.
- for baking pottery, (P.), B., 395.
- for ceramic articles, (P.), B., 1095.
- rapid-fire, miniature, B., 63.
- Kinematograph films, manufacture of, (P.), B., 947.
- fine-grain developers for, B., 275.
- Kinematograph films, double toning of, B., 464.
- protection of image-bearing surface on, (P.), B., 1123.
- colour, production of, (P.), B., 699, 783.
- positive, production of, (P.), B., 180.
- development of, B., 783.
- sound, treatment of, (P.), B., 863.
- synchronisation marking of, (P.), B., 994, 1028.
- detection of sodium thiosulphate in, B., 180.
- Kinematography, manufacture of recording media for, (P.), B., 726.
- colour, (P.), B., 1123.
- optical system for, (P.), B., 464, 654.
- white-light prism device for, (P.), B., 276.
- filter-screen supports for, (P.), B., 824.
- elimination of moiré effects in, (P.), B., 180.
- multicolour, preparation of films for, (P.), B., 368.
- Kinetics and ionic reactions, A., 1244.
- in mixed solvents, A., 315, 316, 690.
- chemical, A., 1132.
- Kinetic theory of gases, A., 39.
- of liquids, A., 31.
- Kirchhoff constant, dependence of, on temperature, A., 1221.
- Kirsch, evaluation of, B., 859.
- determination of hydrogen cyanide in, B., 218.
- Klebelobergite, A., 595.
- Knoevenagel reaction, A., 935.
- catalysis of, by amines, A., 1017.
- Kojic acid, formation of, by *Aspergillus*, A., 524, 525.
- hydrogenation of, and its relationship to the products of dismutation of sugars, A., 1399.
- and its determination, A., 1092.
- Kola, evaluation of, B., 45.
- Kola nuts, catechins from, A., 96.
- Kolm, A., 1391.
- Koppite, crystal structure of, A., 549.
- Kordes' law, A., 32.
- Kordylite, crystal structure of, A., 1218.
- Körö oil, B., 124.
- Kossel-Magnus theory, A., 287.
- Koumiss, from mare's milk, B., 271.
- Krypton, atomic weight of, A., 666.
- pure, extraction of, from liquid air residues, B., 881.
- effective cross-section of, A., 139.
- spectrum of, A., 7, 1344.
- K-series spectrum of, A., 4.
- spark spectrum of, A., 7.
- Zeeman effect in, A., 780.
- third spark spectrum of, A., 992.
- ionisation of, by positive alkali ions, A., 1206.
- ionised, spectrum of, A., 276.
- physical constants of, A., 1117.
- crystal structure of, A., 288.
- in natural gases of Bulgaria, A., 594.
- Kundt's tube, modified, A., 929.
- Kynurenic acid, formation and excretion of, A., 513.
- production of, from tryptophan derivatives, A., 868.
- Kynurenine, and its derivatives, A., 513.

L.

- Laboratories, chemical, physical methods in, A., 18, 330.
- Laccolith, of Shonkin Lag, Montana, A., 1265.
- Lace, manufacture of nitrated fabric for backing of, (P.), B., 244.
- Lacquers, (P.), B., 597.
- manufacture of, (P.), B., 261, 686, 895.
- absorption of ultra-violet light by films of, B., 984.
- measurement of abrasion resistance of, B., 308.
- pigmented base for, (P.), B., 1107.
- anthraquinone derivatives for pigments for, (P.), B., 623.
- use of colophony in, B., 895.
- aliphatic diluents for, B., 451.
- addition of ursolic acid and other plant products to, B., 642.
- manufacture of coatings of, (P.), B., 404.
- photomicrographs of novelty finishes with, B., 260.
- for aircraft, B., 1062.
- for preserving tins, B., 451.
- artificial, (P.), B., 598.

- Lacquers**, cellulose, polish for surfaces of, (P.), B., 895.
 coating with, (P.), B., 405.
 production of lettered surfaces with, (P.), B., 819.
 cadmium pigments in, B., 126.
 accelerated testing of, B., 72.
 coloured, manufacture of, (P.), B., 357.
 nitro-, manufacture and use of, B., 357.
 for leather, B., 357.
 nitrocellulose, B., 260.
 apparatus for production of, B., 685.
 solvents for, B., 451.
 effect of heat and light on films of, B., 983.
 kauri gum in, B., 260.
 use of pine oil in, B., 876.
 containing oils, drying of, B., 1018.
 finishing of surfaces with, (P.), B., 127.
 abrasion test for, B., 33.
 bronze, prevention of gelling of, B., 984.
 non-inflammable, (P.), B., 936.
 nitrocellulose and oil, "water-spotting" of, B., 553.
 nitro-cotton, solvents for, B., 553.
 non-penetrative, production of, (P.), B., 72.
 transparent, (P.), B., 72.
 urea-formaldehyde, (P.), B., 597.
- Lactacidogen** in muscle contraction, A., 117.
 in intermediary metabolism, A., 386.
- Lactation**, diet requirements for, A., 772.
- Lactenin**, A., 252.
- Lactic acid**, B., 86.
 preparation of, for use in baking powder and self-raising flour, (P.), B., 415.
 manufacture of, by fermentation, B., 650; (P.), B., 40.
 and its esters, (P.), B., 433.
 optical rotation of, A., 1272.
 equilibrium between glycogen and, A., 513.
 oxidation of, A., 67.
 photochemically, A., 197.
 induced, A., 864.
 in muscle of warm-blooded animals, A., 1184.
 effect of, in diet, A., 1184.
 on hæmolysis, A., 1441.
 caloric quotient of, in muscle, A., 386.
 relation between sympathetic nervous system and, A., 1184.
 distribution of calcium and, in tissue cultures, A., 869.
 formation of, in glycolysis in blood, A., 859.
 after intravenous injection of hexoses, A., 258.
 co-enzyme of, A., 1449.
 post-mortem, in liver, A., 391.
 by bacteria in milk, A., 1459.
 in muscular work, A., 1327.
 in muscle, A., 866, 867.
 influence of oxygen on, A., 258.
 by enzymes, A., 1184.
 co-enzyme of, A., 654.
 inhibition by amylase of, A., 766.
 in muscle and organs, A., 1327.
 effect of injection of sugars on, A., 512.
 by tissues of warm-blooded animals, A., 765.
 determination of, in mixtures, A., 662.
 apparatus for, A., 1202.
 in blood, A., 973.
 in blood and tissues, A., 1320.
 in wines, B., 822, 942.
 B.P., volumetric assay of, B., 862.
- Lactic acid**, esters, production of, (P.), B., 666.
 amyl and butyl esters as solvents for lacquers, B., 553.
- dl-Lactic acid**, toxicity of, and its assimilation, A., 386.
- Lactobacillus**, xylose fermentation by, A., 1334.
- Lactolides**, preparation of, A., 710.
- Lactones**, unsaturated, hydrogenation of, to deoxy-acids, A., 1270.
- Lactose** (*milk-sugar*), speed of crystallisation of, B., 1115.
 detection of, in urine, A., 644.
 detection and determination of, in urine, A., 1179.
 β -Lactose, preparation and use of, B., 737.
 5- β -Lactosidylhirsutidin chloride, A., 1426.
- Ladles**, heating of metals in, (P.), B., 255.
- Lævan**, constitution of, and its triacetate, A., 827.
- Lævulanilide**, condensations with, and its structure, A., 944.
- Lævulic acid**, A., 1035, 1272, 1397.
- Lævulic acid**, preparation of, from carbohydrates, A., 1035.
 and its esters and their derivatives, A., 197.
 esters and their vapour pressure, A., 1272.
 alkyl esters, hydrogenation of, A., 1397.
 phenylacethydrzone, A., 475.
- Lævulic peroxide**, formation of, from caoutchouc, A., 733.
- Lævulosans** in cereals, B., 859.
- Lævulose** (*d-fructose*; *fruit-sugar*), pure, manufacture of, from inulin, (P.), B., 562.
 effect of amino-acids on optical rotation of, B., 693.
 oxidation of, by bleaching powder, B., 821.
 fate of, in the organism, and its determination, A., 512, 538.
 tolerance to, A., 646.
 acetylated, action of hydrofluoric acid on, A., 715.
 determination of, iodometrically, A., 1400.
 colorimetrically, in presence of other carbohydrates, A., 1039.
 in honey, B., 1115.
 in sweetened condensed milk, B., 651.
- Lakes**, carbon dioxide contents of, A., 272.
 soda, biochemical formation of soda in, A., 458.
- Lakes**, colour, manufacture of, (P.), B., 404, 686.
 precipitating agents for, B., 126.
 from petroleum, (P.), B., 686.
 for intaglio printing, (P.), B., 337.
- Lake of Geneva**, carbonates in sediments of, A., 59.
- Laminaria**, constituents of cell wall of species of, A., 776.
 algin from, A., 535.
 seasonal variation of carbohydrates in, A., 883.
- Lamps**, electric. See Electric lamps.
 helium, hot cathode, for polariscopes, A., 1262.
 metal-arc, and metal-vapour, (P.), B., 29.
 neon, photometry of, A., 539.
 neon-mercury, stabilisation of light emitted by, (P.), B., 304.
 quartz, use of, in wine analysis, B., 40.
 sodium, A., 703.
- Lampblack**, production of, (P.), B., 189.
 from coal dust, (P.), B., 1035.
 comparison of acetylene black, gas black, and, B., 6.
 commercial, adsorptive properties of, B., 466.
- Lampreys**, vitamin-D in, A., 1465.
- Lampshades**, decoration of, (P.), B., 389.
- Lanadigin**, A., 119.
- Lanoline**, production of, (P.), B., 307.
 ultra-violet irradiation of sterols of, B., 1105.
- Lanthanum**, extraction of, from cerite, A., 51.
 crystal structure of, A., 413.
- Lanthanum alloys** with mercury, preparation of, A., 805.
- Lanthanum hydroxide**, solubility of, in water, A., 677.
 iodate, solubility of, in aqueous salt solutions, A., 309.
 mercuride, A., 1381.
 monoxide, band spectrum of, A., 540, 1210.
 persulphate, electrolytic preparation of, A., 178.
- Lanthanum determination** :—
 determination of, A., 677, 702.
- Lard**, treatment of, (P.), B., 259.
 tank for rendering of, (P.), B., 1146.
 hydrogenation of, B., 1105.
 unsaturated fatty acids in, from pigs fed on menhaden oil, A., 380.
- Larocain**, A., 387.
- Laserpitium hispidum**, essential oil of, B., 274.
- Lasianthus**, methyl mercaptan in leaves of species of, A., 661.
- Lattice energy** and state of combination, A., 787.
- Laudanosine**, oxidation of, A., 499.
- Laumontite**, absorption of gases by, A., 34.
- Launders**, (P.), B., 198, 584.
- Laundry materials**, detection of sodium silicate in, B., 675.
- Laurapukine**, and its salts, A., 749, 750.
- Laurel**, structure of kernel fat of, A., 535.
- Laureline**, constitution of, and its derivatives, A., 749.
- Lauric acid**, amino-, diazo-ester from decomposition of, A., 832.
 α -bromo-, esters of, A., 1395.
- Laurus camphora**, oil and camphor content of leaves of, B., 274.
- Lautarite**, crystal structure of, A., 550.
- Lavas**, Hawaiian, radium content of, A., 930.
 Pacific, petrography of, A., 708, 816.
- Lavender oil**, B., 417.
- Leaching apparatus**, (P.), B., 952.
- Lead**, from uraninite, atomic weight of, A., 279.

Lead isotopes, A., 1349.

- nuclear rotation of, A., 783.
- hyperfine structure of, A., 1345.
- nuclear moment of, A., 993.
- production of, from bituminous shale ores, (P.), B., 353.
- purification of, (P.), B., 933.
- recovery of, from waste accumulator plates, (P.), B., 764.
- from waste battery paste, etc., (P.), B., 812.
- separation of, from crude antimony and its ores, (P.), B., 813.
- electrodeposition of, on metals, B., 207.
- refining, refractory materials for furnaces for, B., 1095.
- recovery of arsenic, antimony, and tin from, (P.), B., 539.
- working-up of liquors from, B., 299.
- and its alloys with tin, (P.), B., 725.
- cold-working of, B., 299.
- molten, and its alloys, casting of, (P.), B., 28.
- absorption spectrum of, A., 888.
- absorption of penetrating γ -rays by screens of, A., 1209.
- photo-electric effect of, at low temperature, A., 406.
- radioactivity of, A., 142.
- decomposition of atoms of, A., 16.
- resistance of, to high-frequency currents, at superconducting temperatures, A., 1221.
- atomic heat of, A., 792.
- thermal conductivity of, A., 792.
- thermal expansion of, A., 1361.
- crystals, growth of, in silica gel, A., 1125.
- miscibility of copper and tin with, B., 928.
- corrosion of, B., 206.
- solubility of, in Leipzig water supply, B., 92.
- precipitation of, from solution as sulphide, (P.), B., 924.
- removal of coatings of, (P.), B., 448.
- removal of coatings of, from iron articles, (P.), B., 546.
- from metallic articles, (P.), B., 812.
- and its alloys, removal of antimony from, (P.), B., 812.
- debismuthising of, with calcium, B., 444.
- removal of zinc from, (P.), B., 980.
- in the animal organism, A., 756.
- in hen's eggs, A., 380.
- distribution of, in the organism, A., 119.
- intake and distribution of, in poisoning, A., 1454.
- antimonial, refining of, (P.), B., 303.
- colloidal, preparation of, A., 424; (P.), B., 847.
- deposition of, in the organism, A., 387.
- red. See Red lead.
- soft, effect of addition of metals to, on its resistance to acids, B., 888.
- white. See White lead.
- Lead alloys, A., 900; (P.), B., 890.**
 - effects of cold-rolling and of heat-treatment on, B., 1056.
 - coating of iron with, (P.), B., 119.
 - hardened by heat, (P.), B., 639.
 - for sheathings of electric cables, (P.), B., 548, 814*.
 - with bismuth, crystal structure of, A., 676.
 - with bismuth and with tin, properties of, B., 299.
 - with calcium, for sheathing of cables, (P.), B., 1058.
 - with calcium or strontium, production of, electrolytically, (P.), B., 208.
 - with copper, A., 1224.
 - rate of corrosion of, by sulphuric acid, B., 206.
 - with gold, potential of, A., 435.
 - with sodium, reductions with, A., 1274.
 - with thallium, electrodeposition of, B., 162.
 - quantitative spectroscopic analysis of, A., 1385.
 - spectrographic assay of, B., 1056.
 - determination of antimony in, B., 254.
 - determination of calcium in, B., 254.
- Lead compounds, behaviour of, in the organism, A., 1188.**
- Lead salts, quadrivalent, oxidations with, A., 461.**
- Lead arsenate, electrochemical preparation of, A., 577.**
 - hydrogen arsenate, toxicity of, to Colorado potato beetles, A., 1188.
 - determination of solubility of, in alimentary tract of silk-worms, A., 652.
- azide crystals, thermal decomposition and detonation of, A., 1132.
- detonators. See under Detonators.
- bromide, thermodynamics of molten solutions of lead chloride in, A., 309.
- reaction between sulphuric acid and, A., 323.

Lead carbonate, basic, manufacture of, B., 756.

- See also White lead.
- halogenocarbonates, A., 1254.
- chloride, photo-electric effect for, A., 147, 409.
- conductivity of, containing potassium chloride, A., 785.
- thermodynamics of molten solutions of, in lead bromide, A., 309.
- in zinc chloride, A., 309.
- crystallography of, A., 1001.
- crystalline, refractive index of, A., 148.
- reaction between ammonium chromate and, A., 182.
- chlorides, precipitation of, A., 582.
- chromate, influence of reaction electrolytes on periodic structures of, A., 1122.
- lattice structure of, A., 789.
- basic, production of, (P.), B., 20.
- halides, activity coefficients of, A., 566.
- spectroscopy of dissociation in solutions of, A., 565.
- reaction of, with sodium oxalate, A., 1021.
- solid, relation between thermo-electric power, thermolysis, and ionic mobility in, A., 312.
- compounds of, with carbamide, A., 809.
- double halides, A., 809.
- hydride, volatile, A., 1020.
- iodide, equilibrium of, with silver iodide, A., 1010.
- nitrate, dielectric constants of, in polar and non-polar solvents, A., 786.
- crystallisation of, A., 414.
- nitrate, basic, equilibria of formation of, A., 1011.
- suboxide, manufacture of, and its uses, B., 881.
- monoxide (*litharge*), manufacture of, (P.), B., 685.
- equilibrium of hydration of, A., 799.
- reaction between linseed oil and, B., 685.
- regeneration of, in refining of petroleum, B., 468.
- dioxide, electrodeposition of, on metals, B., 845.
- anodic precipitation of, A., 1377.
- determination of oxygen in, B., 246.
- Triplumbic tetroxide. See Red lead.**
- Lead oxides, production of, (P.), B., 294.**
 - reduction of, by charcoal, A., 51.
- Metaplumbates, A., 808.**
- Lead phosphate, colloidal, preparation of, A., 424.**
 - manufacture of, (P.), B., 925.
 - excretion of lead after injection of, A., 1454.
- sulphide, detector action of, A., 409.
- action of active charcoal on, A., 1246.
- pressed, unipolarity of, A., 155.
- Lead organic compounds, A., 751, 1317.**
 - reactions of, A., 719.
- Lead aryls, action of acids on, A., 751.**
 - diethyl dinitrate, A., 719.
 - di-*o*-tolyl, triphenyl and tritolyl salts, and triphenylallyl and triphenyl- β -*di*hydroxypropyl, A., 1317.
 - di-, tri-, and tetra-*o*-tolyls and phenyl-mono-, -di-, and -tri-*o*-tolyls, and their salts, A., 751.
 - tetra-alkyls, preparation of, (P.), B., 1094.
 - tetraethyl, behaviour of, as anti-knock, A., 690.
 - use of, in internal combustion engines, B., 661.
 - behaviour of, in the organism, A., 1188.
 - determination of, in anti-knock compounds, B., 376.
 - in gasoline, B., 8.
 - triethyl salts, toxicities of, A., 387.
 - tungate, B., 450.
- Lead detection, determination, and separation:—**
 - flash-point test for, B., 545.
 - detection of, in basic bismuth nitrate, B., 675.
 - in the organism, A., 662.
 - in organic tissues, A., 662.
 - detection and determination of, colorimetrically, A., 812.
 - determination of, A., 701, 1025.
 - electrolytically, as dioxide, B., 299.
 - with sodium carbonate, A., 1024.
 - in ores containing barium, B., 978.
 - and its separation from bismuth, A., 588.
 - in calcium phosphate, B., 1009.
 - in lead subacetate, B., 675.
 - in Bordeaux-lead arsenate mixtures, B., 1047.
 - in presence of perchloric acid, A., 701.
 - in slags, B., 888.
 - in tartar emetic, and its separation from antimony, A., 588.

Lead detection, determination, and separation:—

- determination of, in urine, A., 863.
- in zinc oxide, B., 293.
- separation of, from alkaline-earth metals with ammonium acetate, A., 926.
- from barium, calcium, and strontium, A., 453.
- from copper or mercury, A., 187.
- from iron, A., 1260.
- Lead bullion**, refining of, (P.), B., 448.
- Lead dust**, micro-determination of, in factories, B., 1056.
- Lead ions**, adsorption of, on barium sulphate, A., 421.
- Lead mines**, slimes from, A., 254.
- Lead ores**, recovery of lead from, (P.), B., 121.
- containing barium, analysis of, A., 1260.
- containing silver, treatment of, B., 254.
- containing zinc, flotation of, B., 252.
- at Broken Hill, N.S.W., B., 544.
- froth-flotation of, (P.), B., 764.
- Australian, flotation of, B., 637.
- blast-furnace treatment of, in South Africa, B., 978.
- carbonate, reduction of, by means of gases, B., 1056.
- oxidised, concentration of, (P.), B., 164.
- determination of bismuth in, B., 25.
- Lead poisoning**. See under Poisoning.
- Lead shot**, copper-plated, manufacture of, (P.), B., 812.
- Lead wire**, effect of torsion on length of, B., 763.
- Leather**, manufacture of, (P.), B., 173.
- substitute for egg-yolk in, (P.), B., 131.
- salt stain in, B., 265.
- microscopical study of, B., 937.
- photomicrographs of, B., 359.
- treatment of, (P.), B., 505.
- for ore-conveyer belts, (P.), B., 131.
- softening treatment for, (P.), B., 347.
- fat-liquoring of, B., 1063.
- staining of, by copper impurities in vegetable tan liquors, B., 986.
- vulcanisation of rubber to, (P.), B., 213*.
- preparations for wetting of, (P.), B., 716.
- waterproofing of, (P.), B., 600.
- physical properties of, B., 129.
- sampling of, for physical examination, B., 732.
- effect of chrome-tanning on elastic properties of, B., 265.
- apparatus for stretching test of, (P.), B., 659.
- shrinkage temperature of, B., 79.
- density of, B., 409, 986.
- adsorption of sulphuric acid by, B., 79.
- water-permeability of, B., 1109.
- influence of oils on water absorption of, B., 265.
- sanitation and colloid chemistry of, B., 732.
- chemistry of, A., 1178.
- action of enzymes in, A., 521.
- acidity of, B., 408.
- action of free sulphuric acid on, B., 897.
- fixation of vegetable tannin in, B., 986.
- testing of preservatives and impregnating materials for, B., 897.
- protection of, during making up into goods, (P.), B., 601.
- determination of wear resistance of, B., 129.
- production of pearl effect on surface of, (P.), B., 673.
- fastness to rubbing of pigment finishes on, B., 505.
- opaque colour and nitro-lacquers for, B., 357.
- chemistry of linseed oil varnishes for, B., 817.
- effect of defects in raw hide on, B., 505*.
- effect of follicular mange on, B., 937.
- damage of, by dermatophytes, B., 771.
- for coating rollers of spinning machines, (P.), B., 939.
- artificial, manufacture of, (P.), B., 79, 506.
- bookbinding, decay of, B., 1065.
- preservation of, B., 130.
- vegetable-tanned, deterioration of, on storage, B., 130, 1109.
- calf, vegetable tanned, determination of acidity of, B., 130.
- chamois, tanning of, (P.), B., 772.
- chamois, buckskin, etc., tanning of, (P.), B., 310.
- chestnut and quebracho-tanned, deterioration of, by sulphuric acid, B., 1021, 1148.
- chrome-tanned, fat-liquoring of, B., 408.
- utilisation of waste from, B., 453.
- azo-dyes for, (P.), B., 291.
- extraction of glue and gelatin from, (P.), B., 131.
- dyed, examination of, for cause of dermatitis, B., 1109.

- Leather**, imitation, (P.), B., 482.
- rubber mixtures for, (P.), B., 263.
- inextensible, manufacture of, (P.), B., 600.
- mineral-tanned, treatment of, (P.), B., 505.
- detection of, B., 213.
- scrap, treatment of, B., 359.
- shoe, dye for, (P.), B., 855.
- sole, physical properties of, B., 819.
- tanning of, (P.), B., 855.
- synthetic tanned, dyes for, B., 109.
- vegetable-tanned, effect of sulphuric acid on, B., 1065.
- free mineral acids in, B., 1064.
- heavy, moisture in, B., 771.
- analysis of, B., 771.
- determination of strong acids in, B., 938.
- determination of free mineral acids in, B., 819.
- determination of water in, B., 505, 771, 938.
- waste, production of glue from, B., 131.
- bark-tanned, treatment of, (P.), B., 1022.
- wattle-bark-tanned, water-soluble matter in, B., 453.
- determination of fat and moisture in, B., 820.
- determination of total sulphuric acid in, B., 265.
- determination of water in, B., 555.
- Leather factories**, purification of waste waters from, B., 1124.
- Leather industry**, emulsions and suspensions in, B., 265.
- Leaves**, microscopy and histochemistry of, A., 885.
- mechanical treatment of fibres of, (P.), B., 291.
- carbohydrates and their metabolism in, A., 1197.
- effect of storage method on chlorophyll content of, A., 533.
- fat metabolism of, A., 1099.
- drug-containing, ash structures of, B., 696.
- sulphured, production of hydrogen sulphide by, B., 821.
- Le Chatelier-Braun principle**, A., 430.
- Le Chatelier-Broniewski apparatus**, modified, A., 455.
- Lecithin**, manufacture of preparations of, (P.), B., 149.
- sols, preparation and behaviour of, A., 908.
- action of iodine and sodium hydroxide on, A., 75.
- retardation of hydrolysis of fats by, B., 595.
- treatment of textile fibres with, B., 879.
- elimination of choline from, A., 1082.
- enzymic hydrolysis of, A., 984.
- effect of feeding with, on blood, A., 973.
- permeability of tissues to, A., 117.
- egg-yolk, A., 975.
- plant, effect of, on swelling and surface tension of flour-glutin and starch, A., 39.
- use of, in confectionery, B., 87.
- soya-bean, A., 600.
- vegetable, A., 1199.
- determination of, B., 413.
- in fats and oils, B., 641.
- in organs, A., 1178.
- Lecithinase**, A., 984.
- Ledum palustre*, Korean, constituents of, A., 401.
- Leguminosæ*, hydrogen cyanide in, A., 537.
- potash demand of, B., 175.
- Leguminous products**, treatment of, (P.), B., 87.
- Lehrs*, (P.), B., 440, 441.
- Lemna major*, stimulation of, by organic matter, B., 606.
- Lemon essence**, extraction of, by Peratoner's process, B., 863.
- Lemon juice**, preservation of, B., 1120.
- antiscorbutic fraction of, A., 271.
- decitrated, antiscorbutic factor from, A., 773.
- Lemon oil**, mechanical extraction of, B., 318.
- Italian, B., 946.
- Lemonade**, effervescent, examination of, B., 1026.
- Lens**, Spierer, A., 532.
- Leonurine**, A., 536.
- pharmacology of, A., 651.
- Leonurus sibericus*, A., 651.
- alkaloid in, A., 536.
- Lepidine**, 6-nitro-2-chloro-, A., 1318.
- Lepidolite**, manufacture of lithium carbonate from, B., 199.
- use of, in zincless glazes, B., 1049.
- Leprosy**, phosphorus and calcium in blood-serum in, A., 1181.
- urobilin and bilirubin in blood in, A., 382.
- Lessingite** from Kyshtym district, A., 817.
- Lettuce**, organic acids of, A., 884.
- carotene from, A., 1097.
- unsaponifiable lipins of, A., 776, 1341.

- Leucæmia, blood constituents in, A., 1446.
 myeloid, iron and copper in tissues in, A., 865.
dl-Leucine, ester hydrochlorides of, A., 768.
 Leucines, crystal structure of, A., 551.
 isomeric, phenylcarbamido-derivatives, A., 1270.
*iso*Leucines, optically active, and their derivatives, A., 470.
iso- and *allo*-Leucines, configurative relationships of α -bromo-acids from, to amino-acids derived from them, A., 1270.
 Leueite, X-ray distinction between analcime and, A., 595.
 residual silica from action of acids on, A., 1253.
 extraction of potash and alumina from, (P.), B., 393.
 use of, as a fertiliser, B., 1067.
 Leucoalkannin acetate, A., 1063.
 Leucocytes. See Blood-corpuscles, white.
 Leucocytosis, peripheral, A., 375.
 Leucomethylene-blue, oxidation of, A., 241.
 autooxidation of, A., 390.
Leuconostoc, A., 394.
Leuconostoc mesenteroides, effect of, on beet sugar juice, B., 560.
 Leucophanite, A., 332.
 Leucyl-*o*- and *p*-aminobenzoic acids, derivatives of, A., 124.
 Leucyldecarboxyglycine, hydrolysis of, by intestinal erepsin, A., 1456.
 Leucylglycines, isomeric, A., 1270.
dl-Leucyl-*l*-*p*-nitrotyrosine, A., 768.
dl-Leucyl-*dl*-phenyl- β -alanine, A., 768.
dl-Leucyl-*dl*-prolyl-*dl*-leucine, A., 767.
dl-Leucyltaurine, A., 124.
 Leucyltyrosines, and their derivatives, A., 768.
 Leukometers, Bloch, A., 58.
 Levan, production of, A., 267.
 Lichens, constituents of, A., 221.
Lichen islandicus, detection of cetraric acid in, histochemically, B., 611.
 Lichen substances, A., 1055.
 Lichenin, and its pentanitrate, A., 1401.
 Lichosan, solid and dissolved, state of division of, A., 307.
 Liesegang rings, A., 301, 924.
 formation of, A., 426, 563.
 effect of adsorption by precipitates on, A., 559.
 effect of irradiation on, A., 694.
 effect of crushed onion root on, A., 307.
 secondary, A., 907.
 Life, relation of, to electricity, A., 866, 1084, 1451.
 Light, emission of, and atomic structure, A., 405.
 angular momentum of, A., 1350.
 electro-optical modification of waves of, A., 8.
 absorption of, and constitution, A., 1052.
 and photo-effect, A., 1206.
 scattering media for, A., 409.
 scattering of, by electrons, A., 11.
 by molecular complexes, A., 900.
 Doppler effect in, A., 1211.
 effect of, on chemical reactions, A., 1409.
 centripetal theory of, A., 180.
 on metabolism, A., 1330.
 transformation of, into heat, in solids, A., 282.
 devices sensitive to, (P.), B., 30.
 blue and ultra-violet, source of, A., 995.
 scattered, depolarisation of, A., 1350.
 ultra-violet, measurement of, A., 995.
 apparatus for, A., 592.
 by means of formation of triphenylmethane dyes, A., 1138.
 for investigation of structure, A., 1263.
 apparatus for irradiation of substances with, (P.), B., 123.
 apparatus for treatment of liquids with, (P.), B., 1016.
 examination of solids and liquids in, B., 765.
 filters for, (P.), B., 815.
 absorption of, by organic compounds, A., 144.
 by transparent liquids, A., 283.
 action of, on alkyl iodides, A., 694.
 use of, in industry, B., 122.
 effect of, on higher plants, A., 401.
 permeability of human epidermis to, A., 519.
 polarised, distribution of photo-electrons ejected by, A., 889.
 Wood's, applications of, A., 698.
 Light filters, (P.), B., 417.
 copper salts as, A., 1109.
 for accentuating colour contrasts, (P.), B., 158.
 for reproduction of daylight and sunlight, A., 592.
 Light filters, liquid, for production of artificial sunlight, B., 91.
 in photography, B., 224.
 Lightning, striking points of, A., 706.
 Lignin, A., 74, 469, 717, 828, 941, 942, 1149, 1286, 1289.
 structure of, A., 1278.
 formation of, in plants, A., 1339.
 preparation of, from wood, B., 876.
 physical properties of, from hard and soft wood, A., 883.
 distillation of, with zinc dust, in hydrogen, A., 469.
 action of bromine on, A., 717.
 action of nitrogen dioxide on, A., 74.
 action of sulphurous acid on, A., 1149.
 formation of *n*-propylguaiaacol from, A., 941.
 treatment of materials containing cellulose and, B., 197.
 derivatives, ultra-violet absorption spectrum of, A., 283.
 alkali-, production of synthetic resins from, B., 502.
 beech-wood, and its alkyl derivatives, A., 203.
 fir-wood, composition of, A., 1401.
 pine, A., 1041, 1278, 1401.
 constitution of, A., 1149.
 action of bromine on, A., 1278.
 mercaptolysis of, B., 339.
 spruce, action of hypochlorous acid on, A., 828.
 Willstätter's, absorption of bases by, A., 203.
 determination of, in wood, B., 876.
 in Australian woods, B., 1051.
 in wood pulp, B., 1005, 1088.
 Lignin, chloro-, B., 753.
 Lignite, B., 523.
 structure of, A., 133.
 constituents of, and its low-temperature distillation, B., 51.
 drying of, by the Fleissner process, B., 282, 1032.
 low-temperature carbonisation and distillation of, (P.), B., 872.
 distillation of, (P.), B., 329.
 ovens for, (P.), B., 189.
 treatment of distillates from, with sulphuric acid, B., 282.
 methylation of, B., 372.
 manufacture of tanning materials from, (P.), B., 505.
 Dakota, B., 97, 323, 372.
 from Kankyohokudo, Korea, analysis of, B., 523.
 Moscow and Tasmanite, fossil spore-pollens from, A., 536.
 Northern Ontario, carbonisation and briquetting tests on, B., 97.
 Saskatchewan, under-water storage of, B., 97.
 determination of moisture in, B., 1080.
 Lignoceric acid, extraction of, from tallol, A., 1272.
 derivatives of, A., 1396.
 Lignoceryl alcohol, A., 1396.
 extraction of, from tallol, A., 1272.
 α - and β -Lignosulphonic acids, A., 338.
 Lily, corn treatment for, B., 1112.
 Lime. See Calcium oxide.
 Lime marl, determination of calcium carbonate in, B., 536.
 Limestone, rate of calcination of, B., 629.
 burning of, (P.), B., 1138.
 bitumen and molasse of, at Pyrimont, A., 1030.
 treatment of, to give appearance of marble, (P.), B., 493.
 silication of, for road surfaces, B., 634.
 phosphatic, as mineral supplement in diet, A., 1326.
 determination of calcium and magnesium in, B., 245.
d-Limonene, action of sulphur on, A., 95.
 Limonite, reduction of, by methane, B., 442.
 Limulus, action of metallic salts on urease from amœboocytes of, A., 1090.
Limulus polyphemus, composition of blood of, and of sea water, A., 1319.
 Linalool, preparation of, from coriander oil, and its derivatives, A., 492.
 isomerisation of, to camphor, in presence of aluminium, A., 1299.
Linarea vulgaris, anthochlor of, A., 738.
Lindera strychnifolia, constituents of roots of, A., 401.
 Linen, ozonising treatment of, (P.), B., 197.
 metallised, manufacture of, (P.), B., 347.
 Linen fabrics, action of detergents on, B., 628.
 Linkings, double, oxidation of, by peracetic and perbenzoic acids, A., 1150.
 conjugated, A., 1067, 1273, 1413.
 Linoleic acid, preparation and purification of, A., 1271.
 isomerism of, A., 1395.
 methyl ester, polymerisation of, A., 1271.

- iso*Linoleic acid, of silkworm pupae, hydrogenation and constitution of, A., 601.
- Δ^6 -Linoleic acid, and its ethyl ester, action of maleic anhydride on, A., 198.
- ethyl ester, preparation of ethyl Δ^1 -elaidate from, A., 196.
- Linoleic acids, dihydroxy-, and their methyl esters, A., 1395.
- Linolenic acid, and its esters, partial hydrogenation of, A., 335.
- hydrogenation of, A., 1148.
- methyl ester, polymerisation of, A., 1271.
- hydrogenation of, A., 712.
- thiocyanometric determination of, A., 1034.
- Linolenodizoomarin bromide, A., 602.
- Linoleodiolein bromide, A., 602.
- Linoleodizoomarin bromide, A., 602.
- Linoleum, (P.), B., 598.
- manufacture of, (P.), B., 128, 554, 984.
- decoration of, (P.), B., 34, 71.
- qualities of pigments for, B., 126.
- inlaid, manufacture of, (P.), B., 687.
- Linoxyn, resoftening of, B., 1018.
- Linseed. See *Linum usitatissimum*.
- Linseed oil, composition of, A., 1034, 1395; B., 551.
- production of, (P.), B., 850.
- drying of, B., 500, 595.
- up to gelation, B., 893.
- hardening of, at high hydrogen pressures, B., 499, 849.
- hydrogenation of, A., 602.
- heat treatment of, for varnishes, etc., (P.), B., 895.
- absorption of oxygen by, B., 210, 355.
- oxidation of, B., 401.
- influence of anti-oxidants on, B., 401, 727.
- oxidation of emulsions of, in presence of hæmatin and potassium cyanide, A., 1245.
- bleaching of, B., 169; (P.), B., 850.
- reaction between litharge and, B., 685.
- reaction of inorganic basic pigments with, B., 356.
- blown and sulphur-treated, B., 31.
- Linum neomexicanum*, poisonous constituent of, A., 276.
- Linum usitatissimum*, effect of fertilisers on growth and oil content of, B., 457.
- Lipæmia, A., 253, 611.
- Lipase, action of copper sulphate and sodium taurocholate on, A., 984.
- salivary, A., 112.
- α -Lipase, in horse serum, A., 1456.
- Lipins, nephrosis by, A., 978.
- physical properties of blood-serum in, A., 978.
- bacterial, A., 769.
- of tubercle bacilli, A., 770.
- determination of, volumetrically, A., 642.
- in organs, A., 1081.
- in thyroid gland powder, A., 643.
- Lipolytic substances, A., 1190.
- Lipuria, A., 511.
- Liquids, physical properties of, A., 674.
- mechanical double refraction of, in relation to constitution, A., 286.
- spectra of, A., 1211.
- influence of shape and polarity of molecules on X-ray spectra of, A., 289.
- röntgenography of, A., 1218.
- diffraction of X-rays in, A., 152, 1218.
- scattering of light by, A., 20.
- optical properties of, in a magnetic field, A., 787.
- magnetic birefringence and rotatory polarisation in, A., 787.
- diamagnetism of, A., 1357.
- elliptical polarisation and surface films of, A., 299.
- dipole moment at interface of gas and, A., 1213.
- free electric charges on droplets of, A., 1229.
- under pressure, dielectric constant of, A., 1354.
- reflexion of vapour molecules at surface of, A., 904.
- molecular interchange between vapours and, A., 1117.
- thermal conductivity of, A., 156.
- measurement of total heat of, A., 1361.
- specific heat, compressibility, and heat conductivity of, A., 1363.
- heat of vaporisation of, A., 155.
- thermostatic control in electrical heating of, (P.), B., 96.
- apparatus for heat treatment of, (P.), B., 3*.
- gas-heated heating apparatus for, (P.), B., 869.
- Liquids, heating and cooling apparatus for, (P.), B., 182.
- effect of scrapers on heating, cooling, and mixing of, B., 785.
- heat exchangers for, (P.), B., 951.
- effect of period of heating on boiling points of, A., 294.
- cooling of, (P.), B., 998.
- compensating for volume changes in, due to temperature, (P.), B., 704.
- wax-resin balls for determination of specific gravity of, (P.), B., 571.
- apparatus for controlling density or viscosity of, (P.), B., 95.
- vapour pressure of, A., 564.
- boundary state in, A., 559.
- viscosity of, in relation to structure, A., 1363.
- comparison of viscosities of, by oscillating columns, A., 1222.
- viscous flow of, and film formation, B., 369.
- electrical instrument for measuring consistency of, B., 29.
- heat transfer to, in viscous flow, B., 701.
- calculation of equilibrium concentrations in adsorption from, A., 1227.
- apparatus for determination of surface tension of, A., 190.
- diffusion of, A., 1119, 1364.
- kinetic theory of, A., 31.
- measurement of velocity of, (P.), B., 49.
- rate of flow of, in cylindrical tubes, B., 701.
- apparatus for regulation of flow of, (P.), B., 49.
- device for producing constant flow of, A., 704.
- apparatus for control and indication of flow of, (P.), B., 746.
- treatment of, with gases, (P.), B., 703.
- apparatus for, (P.), B., 571, 616, 954.
- packing for chambers for, (P.), B., 1126.
- with solids, (P.), B., 788.
- apparatus for, (P.), B., 371.
- washing of, (P.), B., 826.
- purification of, (P.), B., 424.
- electro-osmotically, (P.), B., 258.
- apparatus for clarification and purification of, (P.), B., 2.
- centrifugal clarification apparatus for, (P.), B., 49.
- drying of, (P.), B., 954.
- intensive drying and internal equilibrium in, A., 430.
- superheating and intensive drying of, A., 294, 430.
- removal of dissolved air from, (P.), B., 1030.
- agitation and aeration of, (P.), B., 616*.
- apparatus for aerating or mixing of, (P.), B., 523*.
- evaporation of, (P.), B., 183, 228*.
- vaporisation apparatus for, (P.), B., 521.
- film evaporators for, (P.), B., 1030.
- evaporation, concentration, and condensation apparatus for, (P.), B., 1126.
- filtration of, (P.), B., 703.
- from fine solids, (P.), B., 183.
- sterilisation of, (P.), B., 2, 141.
- distillation of, (P.), B., 49, 615.
- apparatus for, (P.), B., 571.
- atomisation of, (P.), B., 571, 616, 1126.
- mechanism of, B., 657.
- atomisers for, (P.), B., 1030.
- apparatus for conveyance, etc. of, (P.), B., 954.
- transference of, in small quantities, A., 929.
- apparatus for automatic discharge of, (P.), B., 280.
- mixing apparatus for, (P.), B., 703, 788.
- automatic apparatus for mixing and delivering of, (P.), B., 1076.
- contraction of, on mixing, A., 418.
- apparatus for blending, mixing, agitation, etc. of, (P.), B., 910.
- non-turbulent circulation of, (P.), B., 95.
- contact apparatus for gases and, (P.), B., 616, 954, 1031, 1079, 1126, 1127.
- contact apparatus for solids and, (P.), B., 954.
- separation of, from solids, (P.), B., 519, 659, 953.
- by settling, (P.), B., 998.
- apparatus for, (P.), B., 141, 787.
- centrifugal separator for solids and, (P.), B., 519.
- screw presses for separation of, from pasty masses, (P.), B., 1126.
- of different densities, separation of, (P.), B., 953.
- press for extraction of, (P.), B., 570.
- supply of reagents under pressure to, (P.), B., 1031.
- electrical detection of foreign matter in, (P.), B., 305.
- Liquids, anisotropic. See under Anisotropic.

- Liquids**, binary mixed, Debye dipole theory of, A., 157.
 molecular composition of, A., 1094.
 specific heat of, A., 900.
 conducting, dielectric constants of, A., 23, 894.
 corrosive, vessels for containing, (P.), B., 1079.
 crystalline. See Crystalline liquids.
 dark-coloured, titration of, A., 810.
 degassed, dielectric strength of, A., 999.
 four-phase, immiscible mixtures of, A., 159.
 inflammable, combustion of, A., 1131.
 light, device for separation of, (P.), B., 520.
 of low freezing point, for cooling, etc., (P.), B., 616.
 mixed, Raman spectra of, A., 668.
 X-ray spectra of, A., 151.
 diamagnetism of, A., 900, 1000, 1223.
 vapour pressure of, A., 900.
 distillation of, (P.), B., 183.
 separation of, (P.), B., 954.
 volatile, analysis of, A., 449.
organic, internal and surface structure of, A., 413.
 Raman effect and constitution in, A., 667.
 magneto-optical dispersion of, A., 24.
 electric birefringence of, A., 669.
 dielectric constants of, at medium frequency, A., 1213.
 specific heat of, A., 1003.
 boiling point and vapour pressure formulae for, A., 294.
 electro-endosmosis of, against glass surfaces, A., 434.
 changes in volume and temperature on mixing of, A., 157.
 treatment of, (P.), B., 473.
 to facilitate storage and handling, (P.), B., 336.
 binary mixed, magnetic susceptibility of, A., 676.
 volatile, storage of, (P.), B., 433.
 viscous, heating and cooling of, (P.), B., 521.
 adiabatic expansion of, A., 1363.
 volatile, testing of purity of, by isothermal distillation, A., 294.
Liquor aluminii acetici, analysis of, B., 44.
Liquor aluminii acetico-tartarici, analysis of, B., 44.
Liquor formaldehydi saponatus, making up of, B., 1073.
Lithidionite, Vesuvian, A., 192, 1029.
Lithium, constitution of, A., 994.
 atoms, structure of, A., 275, 542.
 isotopes of, A., 1207, 1348.
 nuclear moments of, A., 136.
 isotope separation in spectra of, A., 1207.
 spectrum of, A., 539.
 continuous absorption spectrum of, A., 1203.
 band spectrum of, A., 992.
 vapour, anomalous dispersion of, A., 887.
 excitation potentials of, A., 992.
 transport number of, in its amalgams, A., 569.
Lithium alloys with copper, thermal and X-ray analysis of, A., 296.
 with silver, A., 418.
Lithium peraluminates, A., 50.
 bromate, solubility of, in water, A., 799.
 bromide, formation of mixed crystals of, with magnesium bromide, A., 901.
 thermodynamics of molten solutions of, in silver bromide, A., 309.
 carbonate, manufacture of, from lepidolites, B., 199.
 chloride, molecular refractivity and partial molar volume of, in water-ethyl alcohol solutions, A., 680.
 flow of solutions of, in narrow glass tubes, A., 560.
 effect of, in solution, on water and alcohol, A., 40.
 chloride, hydroxide and nitrate, heat content values for aqueous solutions of, A., 912.
 fluoride, structure of, A., 1350.
 ultra-violet transparency of, A., 891.
 hydride, constants for, A., 899.
 iodate, crystal structure of, A., 1001.
 nitrate, conductivity and viscosity of binary alcoholic solutions of, A., 311.
 vapour pressure of solutions of, A., 1005.
 nitride, formation and decomposition of, A., 177.
 oxide, equilibrium of, with silica, A., 169.
 sulphate, system of, with aluminium sulphate, A., 1235.
 tetrasulphide dialcoholate, A., 443.
Lithium organic compounds :—
 Lithium alkyls, action of, on pyridine derivatives, A., 364.
 benzyl, action of mercuric chloride on, A., 502.
 benzyl and isopropyl, preparation of, A., 502.
 phenyl, reaction of, with naphthalic acid derivatives, A., 1415.
 Lithium cells. See under Cells, photo-electric.
Lithium ions, polarisability of, A., 14.
Lithopone, reduction of zinc oxide content of, (P.), B., 597.
 light-resistant, preparation of, B., 983.
 moist, effect of, on aluminium, copper, zinc, and iron, B., 204.
 weather-resistant, production of, (P.), B., 72.
Liver, proteoepexic function of, A., 255.
 testing of function of, with galactose, A., 646.
 tribasic acid in, A., 974.
 excretion of chlorine from, A., 644.
 and liver extract, copper content of, A., 756.
 enzymes of, in anaphylaxis, A., 113.
 effect of biogenic amines and hormones on fat content of, A., 126.
 glycogen in, A., 1450.
 after administration of mineral water, A., 513.
 influence of raw egg-yolk on, A., 513.
 significance of glycogen in function of, A., 644, 1187.
 glyoxalase-co-enzyme ratio in, A., 1455.
 iron content of, A., 857.
 post-mortem production of lactic acid in, A., 391.
 influence of poisonous gases on pigment excretion by, A., 1187.
 increase of proteins of, on mixed diet, A., 385.
 sugar exchange in, A., 1461.
 sugar fermentation in, A., 766.
 water economy in disturbed function of, A., 1446.
 metabolism of, A., 1448.
 in various states, nutritive value of, A., 256.
 effect of preparations of, on anaemia, A., 1323.
 effect of anterior pituitary extracts on, A., 878.
 effect of yeast administration on, A., 117, 257.
 effect of injury to, on blood, A., 1181, 1447.
 effect of destruction of, on gaseous exchange after dextrose administration, A., 114.
 disease, high carbon in urine in, A., 645.
 fat metabolism in, A., 1324.
 iron metabolism in, A., 1446.
 glyoxaline derivatives in urine in, A., 645.
 phenols in blood in cirrhosis of, A., 382.
 cholesterol in blood-plasma in parenchymatous diseases of, A., 511.
 of sensitised animals, nitrogen distribution in, A., 984.
 of embryo chickens, lipins in, A., 1442.
 frog's, protein reserves in, prior to hibernation, A., 647.
 of mice and rats, glycogen in, A., 980.
 rabbit's, glycogen of, A., 249.
 phosphatide of, A., 111.
 rat's, fermentation of sugars by, A., 123.
 zinc content of, A., 250.
 toad's, effect of amino-acids on glycogen mobilisation in, A., 646.
 determination of glutathione in, A., 508.
 determination of glycogen in, A., 642.
 determination of sugar in, A., 642.
Liver extracts, effect of, on chlorophyll development, A., 884.
 vitamins in, B., 461.
Liversidge lecture, A., 436.
Lizards, horned. See *Phrynosoma cornutum*.
Lobeline, B., 273.
Locomotives, pulverised fuel furnaces for, (P.), B., 795.
Logs. See Wood.
Loganberry, control of beetle on, B., 216.
Loparite, crystal structure of, A., 289.
Lubricants, (P.), B., 56, 665, 916, 1039.
 manufacture of, (P.), B., 11, 125, 473, 578, 619, 750, 795.
 treatment of, (P.), B., 1131.
 velocity distribution in thin layers of, A., 554.
 from castor oil, (P.), B., 307.
 for gears, (P.), B., 832.
 for textile machinery, (P.), B., 873.
 inorganic, A., 58, 330.
 non-freezing, (P.), B., 356.
Lubricating greases, manufacture of, (P.), B., 32.
Lubricating oils, B., 187, 377; (P.), B., 473.
 structure of, B., 376.
 determination of mean molecular weights of, by cryoscopic methods, B., 1035.
 manufacture of, (P.), B., 56, 619, 832, 916, 962, 1131.
 from crude oils, (P.), B., 1002.
 from heavy hydrocarbon oils, (P.), B., 916.
 by distillation of fuel oil, B., 1035.
 from petroleum oils, (P.), B., 832.

Lubricating oils, solvent extraction of, B., 829.
 recovery of, from mineral oils, (P.), B., 529.
 reclaiming of, (P.), B., 193*, 236, 578, 916.
 purification of, (P.), B., 578, 1039.
 refining of, (P.), B., 873.
 determination of refining degree of, B., 792.
 apparatus for cleansing of, (P.), B., 146.
 water-washers for, (P.), B., 473.
 removal of waxes from, B., 1035.
 properties of, B., 997.
 relationship between viscosity of, and temperature, B., 525, 708.
 increasing viscosity of, (P.), B., 474.
 solubilities of, in organic solvents, B., 377.
 distillation of, (P.), B., 384.
 acid treatment of distillates from, B., 328.
 rectification of, (P.), B., 11.
 treatment of, (P.), B., 473, 873, 916.
 effect of, with fuller's earth, etc. on oxidisability and oiliness, B., 284.
 composition for, (P.), B., 332.
 stabilisation of, for use in chronometers, etc., B., 661.
 amount of, burned in gasoline engines, B., 469.
 effect of paraffin in, B., 792.
 oil-sludge accelerator for testing of, (P.), B., 473.
 Baku, increase in viscosity of, under pressure, B., 500.
 compressor, purification of, B., 188.
 mineral, physical properties and constitution of, B., 708.
 effect of, on detonation, B., 525.
 petroleum, chart for estimation of viscosity-gravity constant of, B., 618.
 synthetic, B., 328.
 relation between chemical constitution and physical properties of, B., 707.
 viscous, (P.), B., 56.
 waste, cleansing of, (P.), B., 384.
 determination of carbon residue of, B., 101.
 determination of "goudron number" of, B., 377.
 Lubricating waxes, solubilities of, in organic solvents, B., 377.
 Lucerne (*alfalfa*), potash manuring of, B., 734.
 "inoculation" of, B., 1023.
 vitamin-A from, A., 880.
 effect of drying on, A., 1463.
 value of, as fodder, B., 857.
 effect of ash of, in diet of calves, A., 1451.
Lucilia sericata (blow-fly), enzyme from larvæ of, A., 1456.
 Lumbang oil, isolation of heptadecic acid from, A., 935.
 Lumber. See Wood.
 Luminescence due to radioactivity, A., 783.
 in solutions, centres of, A., 21.
 galvano-. See Galvano-luminescence.
 Luminescence analysis. See under Analysis.
 Luminescent substances, production of, A., 321.
 Lumino-transformation, A., 1111.
 Lungs, foetal, toxicity of, A., 379.
 guinea-pig's, fat-splitting enzyme from and its action on tubercle bacilli, A., 770.
 isolated, action of foods on, A., 866.
 determination of residual air of, A., 866.
 Lupanine, constitution of, A., 371.
 action of hydriodic acid on, A., 970.
 action of fuming hydriodic acid on, and its hydrogen tartrate, and dichloro-, A., 1433.
 Lupanines, and their salts, A., 498.
 Lupaninecyanoamide, and bromo-, A., 371.
 Lupins, decomposition of green parts of, in the soil, B., 1023.
 white, influence of acids and of potassium acetate on seedling roots of, A., 1197.
 Lupin alkaloids, A., 498, 499.
 Lupinane, 11-amino- and -bromo-, derivatives of, A., 499.
 β -Lupinane chloroaurate, A., 371.
 Lupaninecyanoamide, and bromo-, A., 370.
*epi*Lupinic acid, derivatives of, A., 635.
 Lupinine, constitution of, A., 370, 750.
 and its derivatives, A., 635.
 methyl ether, derivatives of, A., 499.
*allo*Lupinine, A., 370.
Lupinus albus, production of carbon dioxide by germinating seeds of, A., 1339.
 effect of mercurials on growth of, B., 1112.
N-Lupinyldihydroisindole, A., 499.

N(11)-Lupinylglutaramic acid, methyl ester, A., 499.
N(11)-Lupinylphthalimide, A., 499.
N(11)-Lupinylpyrrolidine, and its dimethiodide, A., 499.
N(11)-Lupinylsuccinimide, and its methiodide, A., 499.
 Luteic acid, and its sodium salt, A., 1094.
 Lutein, and its derivatives, A., 885.
 Luteolinidin chloride, synthesis of, A., 1304.
 salts, A., 1425.
 Luteose, A., 1094.
 Luting materials, resistant to chlorine, (P.), B., 680.
 Lycopene, structure of, A., 597.
Lycopodium clavatum, spore membrane from, A., 536.
 Lymphocytes, enzymes of, A., 1181.
dl-Lysine, α -substituted derivatives of, A., 767.
 Lysol, production of, and cresols therefor, B., 833.
 Lysozyme in tissues of mammals, A., 380.
d-Lyxal, identity of *d*-xylal with, A., 1038.
d-Lyxose dibenzyl-, phenyl-*p*-chlorobenzyl-, and phenylbenzyl-hydrazones, A., 938.

M.

Ma Huang, benzylmethylamine in extract of, A., 886.
Macacus rhesus. See Monkeys.
 Macadam, tarred, manufacture of, (P.), B., 351.
 Macaroni paste, determination of egg content of, B., 944.
 Machilol, identity of, with eudesmol, A., 1302.
 *di*hydroxy-, and its benzoate, A., 274.
 Machines, centrifugal. See Centrifugal machines.
 Madake. See *Phyllostachys quilibi*.
 Madar juice, detection of, A., 134.
 Magmas, crystallisation of, A., 1390.
 basaltic, crystallisation and differentiation in, A., 459.
 Magnesite, polyhedric concretions of, A., 708.
 Russian and Slovakian, B., 21.
 distinction between dolomite and, A., 453.
 Magnesium, and its alloys, A., 898.
 pure, preparation of, A., 1380.
 production of, from its compounds, (P.), B., 813.
 electrolytically, (P.), B., 29, 165*, 639, 891.
 from dolomite, (P.), B., 27.
 recovery of, from its ores, (P.), B., 1010.
 and its alloys, purification of, (P.), B., 891*.
 refining of, (P.), B., 27, 890.
 cleaning of articles of, (P.), B., 1102.
 and its alloys, casting of, B., 28, 547.
 mould dressings for, (P.), B., 814.
 welding of, (P.), B., 256.
 alloyability of beryllium with, B., 845.
 and its alloys, protection of, in heat-treatment, (P.), B., 1102.
 physics and metallography of, A., 1220.
 molecular spectrum of, A., 664, 888.
 electrochemistry of, A., 435.
 and its alloys, thermal and electrical conductivity and Lorenz values of, B., 888.
 specific heat, entropy, and chemical constants of, A., 293.
 molten, and its alloys, treatment of, (P.), B., 257*.
 vaporisation of, in a vacuum, A., 1220.
 absorption of metastable and ionised nitrogen by, A., 1212.
 crystals, physical properties of, A., 673.
 determination of solubility of, in aluminium with X-rays, B., 978.
 reaction between sodium chloride solutions and, A., 318.
 action of salt solutions on, A., 917.
 selective solution of corrosion products of, B., 544.
 and its alloys, treatment of, to render corrosion resistant, (P.), B., 165*.
 increasing resistance to corrosion of, (P.), B., 1102.
 protection of, against corrosion, (P.), B., 354.
 improvement of mechanical properties of articles of, (P.), B., 27.
 content of, in foods, A., 537.
 distribution of, in fungus mycelium, A., 1092.
 function of, in enzymic carbohydrate degradation, A., 1332.
 effect of calcium on function of, in plants, A., 774.
 absorption of, from the alimentary tract, A., 982.
 powdered, spontaneous inflammability of, A., 1016.
 Magnesium alloys, (P.), B., 847.
 production of, (P.), B., 1102.

Magnesium alloys, surface protection of, (P.), B., 164.
 protection of, against corrosion, B., 1057.
 with aluminium, effect of atmosphere on electrical conductivity and tensile properties of, B., 205.
 cast, B., 1143.
 with aluminium and antimony, B., 1143.
 with aluminium and silicon, A., 158; B., 161.
 with cadmium, X-ray structure of, A., 157.
 electrical conductivity and thermal expansion of, A., 158.
 with cerium, production and refining of, (P.), B., 354.
 with copper, A., 1224.

Magnesium compounds, absorption of, in dogs, A., 515.

Magnesium salts, action of, on oats, B., 38.
 effect of intracerebral injection of, A., 386.
 effect of, on bone formation and rickets, A., 1451.
 soluble, manufacture of, (P.), B., 200.

Magnesium bromide, formation of mixed crystals of, with lithium bromide, A., 901.
 carbonate, determination of, in presence of calcium carbonate, A., 327.
 carbonates, natural, treatment of, (P.), B., 539, 676*.
 barium perchlorate, preparation of, (P.), B., 1093.
 chloride, manufacture of, (P.), B., 1139.
 from chlorine and a magnesium base, (P.), B., 20.
 recovery of, from brine, (P.), B., 1092.
 concentration of solutions of, (P.), B., 840.
 dehydration of, (P.), B., 539, 631.
 purification of, (P.), B., 246.
 equilibrium of, with hexamethylenetetramine and water, A., 684.
 with sodium nitrate and water, A., 1370.
 with sodium nitrate and sulphate and water, A., 41.
 separation of, from calcium chloride, (P.), B., 539.
 effect of, on fermentation, A., 1091.
 determination of, in carnallite, B., 802.
 basic, X-ray examination of, B., 113.
 calcium chloride, manufacture of, (P.), B., 1093.
 hydroxide, equilibrium of, with potassium chloride and water, A., 1128, 1235.
 colloidal, effect of, on liver and kidney lesions, A., 978.
 iodate and nitrate, equilibrium of water and, A., 568.
 nitrate and sulphate, equilibrium of, with potassium nitrate and sulphate, A., 685.
 equilibria of, with sodium nitrate and sulphate, A., 1128.
 nitride, crystal structure of, A., 549.
 oxide (*magnesia*), extraction of, from dolomite, B., 18.
 scattering of X-rays by, A., 138.
 melting of mixtures of aluminium oxide, chromium oxide and, A., 911.
 equilibrium of iron oxides and, A., 310.
 production of moulded products from, (P.), B., 972.
 calcined, analysis of, B., 1061.
 determination of, volumetrically, in minerals and refractory bricks, B., 440.
 peroxide, stability of, B., 756.
 catalytic inhibition of decomposition of, A., 692.
 ammonium phosphate, manufacture of, (P.), B., 1139.
 precipitation and ignition of, A., 55.
 silicates, refractory products from, (P.), B., 158, 884.
 sulphate, refractive index of mixed crystals of zinc sulphate and, A., 547.
 equilibrium of, with potassium sulphate, sodium chloride and water, A., 1011.
 with sodium chloride, A., 311.
 platinised, production of, (P.), B., 925.

Magnesium organic compounds, formation of, A., 473.
 preparation and utilisation of, without use of ether, A., 1411.
 cleavage of β -diketones by, A., 1060.
 action of, on aldehydes, A., 222.
 on halogenated quinones, A., 1062.
 on hexahalogenobenzenes, A., 207.
 on iron halides, A., 106.
 with $\alpha\beta$ -oxido-ketones and esters, A., 354.
 with bromo- and chloro-benzenes, action of carbon dioxide on, A., 220.

Magnesium isoamyl chloride, electrolysis of, A., 206.
 cyanamide, pure, preparation of, A., 807.
 production of, (P.), B., 111.
 dialkyls, A., 206.
 diamide, dialkyls, and dianilide, preparation of, A., 719.

Magnesium organic compounds :—

Magnesium halides, preparation of, A., 718, 719.
cyclohexyl bromide and chloride, preparation of, A., 1043.
p-methoxybenzyl bromide, A., 502.
 methyl iodide, solutions of, in *isoamyl ether*, A., 832.
 action of solid phenyl iodide dichloride on, A., 1151.
 phenyl bromide, action of carbon dioxide on, at high temperatures, A., 206.
 reaction of, with naphthalic acid derivatives, A., 1415.
 phenyl chloride, preparation of, A., 1411.
 phenyl fluoride, preparation of, A., 610.
 pyrryl halides, constitution of, A., 373.
 triphenylmethyl, formation of, A., 79.
 triphenylmethyl bromide, action of, on aromatic ketones and benzils, A., 1058.

Dimagnesium dibromoacetylene, action of chloroacetone on, A., 937.

Magnesium detection, determination, and separation :—
 detection of, with test papers, A., 56.
 colorimetrically, A., 327.
 in printing inks, B., 260.
 determination of, A., 700, 701.
 by alkalimetric titration, B., 802.
 effect of ammonium chloride on, by Sohmitz' method, A., 452.
 colorimetrically, A., 886.
 gravimetrically, A., 55, 1385.
 with 8-hydroxyquinoline, A., 327, 1142, 1259.
 as pyrophosphate, A., 327, 1259.
 in presence of calcium, A., 56, 588.
 in presence of sodium and potassium, A., 1258.
 in roasted blends, B., 544.
 in feeding-stuffs and cattle excreta, B., 652.
 in limestone, B., 245.
 in Portland cement, B., 396.
 in urine, A., 1444.
 in drinking water, B., 92.
 separation of, from calcium, A., 701.
 from sodium and potassium, A., 56.

Magnesium ingots, manufacture of, (P.), B., 639.

Magnetic apparatus, (P.), B., 68*.
 birefringence, A., 1355.
 and rotatory polarisation in liquids, A., 787.
 cores, production of, (P.), B., 168.
 laminated, (P.), B., 982.
 materials, (P.), B., 846.
 heat-treatment of, (P.), B., 846.
 rotation. See under Rotation.
 sands, reduction of, B., 722.
 storms, theory of, A., 135.
 susceptibility, measurement of, A., 1114.
 of binary mixed organic liquids, A., 676.
 of mesomorphic substances, A., 896.
 of metals, effect of internal stress on, A., 673.
 curves, autographic apparatus for determining inflexion points in, A., 330.

Magnetisation, change of, with time, A., 898.
 effect of pressure on critical temperature of, A., 1116.
 and the magneto-caloric effect, A., 1117.
 under influence of alternating field, A., 153.
 in strong fields, A., 898.

Magnetism, theory of, A., 412, 547.
 and molecular structure, A., 547, 788.
 of binary mixed acids, A., 1118.
 of matter in strong magnetic fields, A., 673.
 See also Diamagnetism.

Magnetite, reduction of, by methane, B., 442.
 containing titanium, recovery of iron, titanium, and vanadium from, B., 887.

Magneto-electric saturation effect, A., 1216.

Magneton numbers in Weiss units, A., 1000.

Magnetostriction, theory of, A., 791, 1360.
 transverse effect of, A., 898, 1116.
 and hysteresis, A., 1360.
 of overstrained materials, A., 416.

Magnolia obovata, constituents of essential oil of bark of, A., 274.

Magnoliaceae, quercetin in, A., 131.

Maize, effect of liming on dry matter and field weight of, B., 775.
 reducing power of extracts of, in presence of plant acids, A., 1189.

- Maize**, microchemistry and morphology of endosperm of, A., 1099.
 constituents of expressed sap of, A., 775.
p_H and buffer action of sap of, A., 399.
 physiology of seed coat of, A., 1466.
 stalks of, for production of raw material, B., 241.
 dry matter and carbohydrates in, A., 400.
 decomposition of, by nitric acid, B., 670.
 effect of climate on nitrogen content of, B., 175.
 relation between vitamin-*A* in, and number of genes for yellow pigmentation, A., 658.
 vitamin-*D* in, A., 989.
 production of acetic acid from, A., 1459.
 nutrients needs of, as indicated by expressed sap, B., 1111.
 value of rock phosphate and "bone and superphosphate" for, B., 215.
 effect of superphosphates on germination of, B., 39.
 protection of, against injury by insects, B., 1068.
 fumigation of seeds of, B., 858.
 determination of water in, A., 1201; B., 1070.
- Maize silage**, feeding of, to dairy cows, A., 761.
 starch equivalent of, B., 1120.
- Maja squinado***, mineral content of hæmolymph of, A., 109.
 proteolytic enzymes of, A., 262.
- Malachite-green**, reduction derivative of, A., 481.
- Malaria**, chloræmia in, A., 865.
 jaundice in, A., 1181.
 acute, cholesterol in blood in, A., 1324.
- Maleic acid**, ultra-violet absorption and isomerism of, A., 1110.
l-menthyl ester, A., 1160.
H-Maleic acid, salts and *l*-menthyl esters of, A., 1160.
- Maleic acid**, dichloro-, derivatives of, A., 936.
 dihydroxy-, decarboxylation of, A., 936.
- Maleic anhydride**, Friedel-Crafts reaction with, A., 1155.
 action of, with ergosterol and its derivatives, A., 840.
 on Δ^6 -linoleic acid, and its ethyl ester, A., 198.
 additive heteropolymers of, A., 198.
- 9:10-endoMaleic anhydrideanthracenes**, and their dimethyl esters, and dibromo-, A., 849.
- Maleic anhydride-9:10-dibromoanthracene**, A., 849.
- Male-N-phenylimides**, dichloro-, A., 936.
- Malic acid**, freezing of mixtures of antipodes of, A., 676.
 decomposition of, by yeast from wines, A., 985.
- l*-Malic acid**, free energy, heat, and entropy of formation of, A., 1236.
- Malon-*p*-acetamidoanilide**, A., 210.
- Malonamide**, kinetics of formation of, from ammonia and ethyl malonate, A., 315.
 sodium copper derivative, A., 77.
- Malonanil**, A., 339.
- Malonanilic acid**, and its derivatives, condensation of, with aromatic aldehydes, A., 1155.
- Malonanilide-*p*-arsonic acid**, and its sodium salt, A., 1078.
- Malonanilide-*pp'*-diarsonic acid**, and its sodium salt, A., 1078.
- Malonanilino-*n*-propylamide-*p*-arsonic acid**, and its sodium salt, A., 1078.
- Malondiisobutylamide**, dichloro-, A., 1036.
- Malondiethylamide**, dichloro-, A., 1036.
- Malondinitroanilides**, and dichloro-, A., 1036.
- Malonethylamide**, A., 77.
- Malonic acid**, polymorphism of, A., 1036.
 influence of bases on condensation of aldehydes and, A., 935.
 influence of structure of substituents on temperature of decomposition of, A., 197.
 relation between ultra-violet absorption and structure of derivatives of, A., 1269.
 copper, nickel and zinc salt, dissociation of, A., 1126.
 esters, reactions of, with formaldehyde, A., 603.
 ethyl ester, alkyl derivatives of, A., 1397.
 sodium derivative, action of arsenic chloride on, A., 832.
 additive components of, A., 1272.
- Malonic acid**, amino-, ethyl ester, preparation of, and its derivatives, A., 205.
 action of carbonyl chloride on, A., 471.
 reactions of, A., 338.
 derivative of, with hydantoin-3-acetic acid, A., 966.
N-acyl derivatives, ethyl esters, and their diamides, A., 471.
 oximino-, ethyl ester, preparation of, A., 205.
- Malonic acids**, decomposition of, in various solvents, A., 918.
- Malonyl chloride**, and its alkyl derivatives, reaction of, with β -naphthol and resorcinol methyl ethers, A., 487.
- Malonylcarbamide derivatives**, detection of, microchemically, A., 966.
- Malt**, production of, B., 822.
 apparatus for drying or roasting of, (P.), B., 866.
 treatment of residue from extraction of soluble substances from, (P.), B., 1073.
 viscosity of extracts of, B., 650.
 diastatic power of, B., 217.
 stability of enzymes of, A., 1190.
 proteolytic enzymes in preparations of, B., 693.
 hemicelluloses in spent grain from, B., 903.
 fractionation of proteins of, B., 362.
 harmful effect of dust of, on fermentation, B., 39.
 protective action of, on amylase, A., 519.
 barley and oat, diastatic powers of, B., 738.
 caramelised, production of, (P.), B., 650.
 green, peptidases of, A., 655.
 proteolytic enzymes of, A., 521.
 determination of dextrinolytic activity of, B., 991.
 determination of starch in, B., 561.
- Maltan**, and its acetyl derivative, A., 74.
- Maltol**, determination of, colorimetrically, in malt coffee, B., 316.
- Maltose**, action of, on metabolism of infants, A., 386.
 commercial and synthetic, use of, in biology, A., 1460.
 determination of, in plant extracts, A., 274.
- iso*Maltose**, structure of, A., 1040.
- β -Maltose anhydride**, preparation and melting point of, A., 73.
- Malvaceæ***, proteins of, A., 1198, 1341.
- Mammary glands**, action of oestrus-producing hormone and corpus luteum extracts on, A., 878.
 powdered, water content of animal tissues treated with, A., 126.
- Mandelic acid**, and its salts, optical activity of, A., 149.
 magnesium salt, stability of, A., 221.
 esters, enzymic production of, A., 520.
- d*(-)-Mandelic acid**, glycols derived from, A., 1290.
- l*-Mandelic acid**, ethyl ester, reactions of, and its urethane, A., 1291.
- Mandelic acids**, physical identity of, A., 956.
- Mandelic acids**, chloro-, preparation of, and their derivatives, A., 1054.
- Mandelonitrile**, optically active, A., 483.
- Manganese**, spectrum of, A., 540.
 fluorescence radiation of vapour of, A., 1204.
 resonance radiation from vapour of, A., 664.
 distilled in a vacuum, optical constants of, A., 30.
 thermomagnetic property of, A., 291.
 catalytic action of, on oxidation of quinol, A., 918.
 action of hydrogen cyanide on, A., 803.
 precipitation of, from solution as sulphide, (P.), B., 924.
 by soluble carbonates, A., 927.
 as manganous ammonium phosphate, A., 1142.
 metabolism of. See under Metabolism.
 in Portuguese minerals, A., 1146.
 in foods, A., 978.
 value of, in nutrition, A., 980.
 in nutrition of mice and rats, A., 761, 1185.
- Manganese alloys**, magnetic, A., 1118.
 with aluminium, with copper and with iron, A., 296.
 with copper and nickel, (P.), B., 207.
 non-corrodible, (P.), B., 548*.
 with copper and silver, A., 1364.
 with iron or steel, working of, (P.), B., 811.
 with zinc, A., 1364.
- Manganese arsenate**, manufacture of, as insecticide, (P.), B., 361.
 arsenide, ferromagnetic, transition of, to paramagnetic form, A., 1216.
 nitride, heat of formation of, A., 432.
 dioxide, preparation of, B., 1091.
 adsorption by, A., 904.
 effect of water vapour on adsorption of carbon dioxide by, A., 298.
 precipitated and colloidal, A., 165.
 gels, A., 314.
 stable sols, A., 303.
 hydrates, A., 306.
 oxides, reduction of, by carbon monoxide, A., 568.
 phosphates, A., 1022.
- Manganous compounds**, decomposition of ethyl and isopropyl compounds on, A., 1248.

Manganese:—

- Manganous salts**, electrolytic oxidation of hydrofluoric acid solutions of, A., 577.
- Manganous oxide**, adsorption of hydrogen on, A., 902.
equilibria of, with ferrous oxide and with manganous sulphide, A., 1235.
sulphate, equilibria of, with water and rubidium or thallous sulphate, A., 310.
ammoniate, A., 698.
sulphide, heat capacity of, at low temperatures, A., 552.
equilibria of, with iron silicate and with manganous oxide and silicate, A., 1235.
reactions of iron oxides with, A., 584.
action of sulphurous acid on, A., 1255.
rose, transformation of, to green, A., 1140.
- Manganous acid**, A., 583.
- Permanganates**, decomposition of, in alkaline solution, A., 314.
oxidation of benzoates by, A., 803.
- Manganese detection and determination:—**
detection of, in minerals and rocks, A., 454.
determination of, A., 927, 1261.
by precipitation, A., 702.
with dropping mercury cathode, A., 1261.
colorimetrically, A., 1385.
volumetrically, A., 1385.
in bleaching powder, B., 348.
in fabrics, B., 196.
volumetrically, in ferrosilicon, A., 1142.
in ores and alloys, B., 591.
in soils, B., 556.
in steel, B., 297.
in cobalt steels, B., 1054.
in potable waters, B., 516.
- Manganese ores**, treatment of, (P.), B., 302.
smelting of, (P.), B., 28.
oxide, treatment of, (P.), B., 120.
- Manganite**, crystal structure of, A., 1116.
- Mangostin**, constitution of, A., 1158.
methyl derivatives of, A., 1158.
- Maninositose**, A., 266.
- d-Manual**, identity of *d*-glucal with, A., 1038.
- Mannitol**, X-ray structure of, A., 152, 290, 897.
production of, by *Aspergillus*, A., 1458.
from dextrose, and its determination, A., 1092.
rotatory power of, A., 417.
condensation of, with benzaldehyde, by means of phosphoric oxide, A., 1033.
hexanitrate, brisance of, B., 225.
trisulphite, A., 819.
- Mannosaccharic acid**, potassium salt, action of potassium cyanide on, A., 1273.
- Mannose**, X-ray structure of, A., 152, 897.
ring structure of, A., 201.
pentacetates, ring structure of, A., 337.
 α -halogenotetra-acetyl derivatives, configurational peculiarities of, A., 826.
- Mannose**, α -iodo-, tetraacetate, A., 1355.
- d-Mannose** dibenzyl- and phenyl-*p*-chlorobenzyl-hydrazones, A., 938.
- Mannuronic acid**, and its quinine salt, A., 776.
- Manometers**, for measurement of low pressures, A., 1263.
for small pressure differentials at high pressure, A., 331.
Bourdon, adjustable stop for, (P.), B., 955.
differential modified, A., 929.
Huygens, adaption of, as tensimeter, A., 1144.
ionisation, A., 1263.
mercury direct reading, A., 1388.
sensitive membrane, A., 1144.
short, A., 58.
- Manures**, utilisation of peat for manufacture of, in Russia, B., 691.
composition and rates of decomposition of, B., 647.
effect of drying of, on nitrogen losses and crop yields, B., 774.
effect of C: N ratio in, on nitrogen cycle in soils, B., 456.
storage of, B., 774.
effect of storage on phosphoric acid and phosphate in, B., 1111.
artificial, decomposition of, B., 458.
for mushrooms, manufacture of, (P.), B., 83.
barnyard, effect of, on calcareous soil, B., 38.
cold- and hot-fermented, nitrogen losses and action of, B., 558, 691.

- Manures**, farmyard, effect of, on crop yield and fertiliser action, B., 458.
availability of nitrogen in, B., 691, 774.
microbiology of decomposition of, in soils, B., 312.
artificial, production of, B., 267.
effect of, on soils and crops, B., 267.
green, use of, in Ceylon, B., 988.
decomposition of, in soils, B., 360.
effect of, on nitrogen and nutrient contents of soils, B., 940.
use of soya beans as, B., 1150.
horse, decomposition of, by *Agaricus campestris*, B., 1113.
organic, preparation of, B., 409.
peat, B., 605.
phospho-nitrogenous, manufacture of, (P.), B., 606.
stable, effect of treatment on, B., 38.
formation and decomposition of humus in, B., 509.
stall, changes in, during storage, B., 774.
preservation of, under arid climatic conditions, B., 647.
influence of, on soil, B., 82.
nitrification of, in arable soils, B., 899.
straw, effect of, on soils, B., 558.
See also Fertilisers.
- Marble**, grain growth of, A., 30.
velocity of decomposition of, in acids, A., 1242.
artificial, manufacture of, (P.), B., 249, 680, 721.
imitation, treatment of gypsum and alabaster for, (P.), B., 159.
- Margarincholeic acid**, A., 1179.
- Margarine**, manufacture of, (P.), B., 684, 1026.
apparatus for kneading of, (P.), B., 463.
high-pressure hardening of oils in, B., 641.
vitamin content of, B., 613.
rancid, properties of, B., 935.
masking of colour reaction for, B., 42.
- Marmalade**, naringin in, made from S. African grape fruit, B., 904.
detection of carrots in, B., 43.
- Martensite**, crystal structure of, A., 415.
recovery of, B., 67.
determination of, in quenched steels with X-rays, B., 1053.
- Marzipan**, determination of sugars in, B., 1069.
- Marzipan products**, determination of fat in, B., 859.
polarimetric determination of sucrose and dextrose in, B., 859.
- Mass**, values of, A., 279.
- Mass constants**, A., 667.
- Masseccutes**, treatment of, (P.), B., 649.
bleaching effect of washing of, B., 606.
curing of, (P.), B., 217*.
cause of slow-boiling of, B., 84.
of the second crystallisation, bleaching of, B., 1115.
impure, crystallisation of, B., 736.
low-grade, seeding of, B., 83.
- Masses**, artificial, manufacture of, (P.), B., 503.
- Matches**, manufacture of strips of, (P.), B., 1123.
moisture-proof composition for heads of, (P.), B., 1028.
- Maté**, determination of caffeine in, B., 609.
- Maté tea**. See under Tea.
- Materials**, classification of, by elutriation, (P.), B., 279.
grinding and classification of, (P.), B., 826.
apparatus for treatment of, (P.), B., 142*.
of different densities, pneumatic separation of, (P.), B., 866.
determination of limiting creep stress of, (P.), B., 228.
testing of physical properties of, (P.), B., 3*.
acid-resistant, for chemical plant, etc., B., 909.
aggregate, sieving of, (P.), B., 866.
dry, separation of, (P.), B., 424, 519, 786.
finely-divided, washing of, (P.), B., 826.
granular. See Granular materials.
granular and pulverulent, separation of, (P.), B., 911.
intermixed divided, separation of, (P.), B., 658.
laminated, apparatus for treatment of, under pressure, (P.), B., 570.
moist, worm presses for treatment of, (P.), B., 570.
plastic. See under Plastic.
pulverulent, particle size of, B., 950.
pneumatic drying and heating of, (P.), B., 614.
thermal treatment of, (P.), B., 569.
burners for, (P.), B., 579.
conveyance of, in pipes, (P.), B., 519.
propagation of endothermic reactions in, in electric arc furnaces, (P.), B., 1016.
conversion of, into granules, (P.), B., 998.

- Materials**, semi-liquid, storing and mixing of, (P.), B., 658.
 wet, feeding of, (P.), B., 911.
- Matgrass**, extermination of, B., 313.
- Matricaria chamomilla**, determination of essential oil in, B., 135.
- Matter**, genetic development of, A., 444.
 and radiation, A., 1350.
 activation of, A., 666.
 conversion of energy into, A., 1209.
 inorganic, transition of, to organic matter, A., 1081.
 living, equilibria in, A., 384.
- Meadows**, manuring of, B., 691, 988.
 rôle of nitrogen in intensive working of, B., 559.
 effect of manures on yield of hay and composition of herbage from, B., 1023.
 effect of applications of nitrogenous fertilisers on growth of herbage plants of, B., 690.
- Meal worm**. See *Tenebrio molitor*.
- Meat**, preparation of, for market, (P.), B., 514.
 colour of, B., 513.
 composition for curing of, (P.), B., 945.
 preservation of, (P.), B., 696, 780, 1154.
 in ice, (P.), B., 653.
 pickling of, (P.), B., 1026.
 in air-tight containers, (P.), B., 780.
 refrigeration of, (P.), B., 861.
 manufacture of dried food products from, (P.), B., 696.
 in diet, A., 515.
 effect of cooking on digestibility of, A., 256.
 value of proteins of, for reproduction and lactation, A., 256.
 frozen, coloration of, B., 461.
 frozen and chilled, chemical changes in fat of, B., 779, 992.
 growth of micro-organisms on, B., 779.
 detection of onset of decomposition in, B., 220.
- Meat extracts**, determination of purines in, B., 316.
- Meat meal**, vitamin-A and -D in, A., 659.
- Medicaments**, colour reactions of, B., 696.
- Medicinal preparations** containing soap, examination of, B., 823.
 determination of alkaloids in, B., 904.
- Medicines** for injection, B., 1026.
- Meerscham**, adsorption of ammonia on, A., 902.
- Melalugin**, A., 1401.
- Melaliginisulphonic acid**, A., 1401.
- Melanterite**, oupriferous, from Skouriotissa mine, Cyprus, A., 191.
- Melezitose**, constitution of, A., 1149.
 effect of, in honey-dew for bees, A., 1327.
- Melilite**, structure of, A., 289, 930.
- Meliphanite**, A., 332.
- Melissa officinalis**, constituents of, A., 536.
- Melons**, musk, fertilisation of tomatoes, sweet corn and, in a 3-year rotation, B., 1067.
 water. See Watermelons.
- Melting baths**, supply of gaseous or liquid agents to, (P.), B., 370.
- Melting point**, determination of, A., 928; (P.), B., 869.
 relation between boiling point, critical temperature and, A., 31.
 relation between crystal structure and, A., 1002.
 of monobasic fatty acids, A., 552.
- Melting point apparatus**, electrically heated, A., 458.
 micro-, A., 189.
- Melting point energy**, relation of, to absolute temperature, A., 912.
- Membranes**, action of, A., 1366.
 blocking effect of, A., 423.
 effect of insulated metal plates on, A., 795.
 collodion, electro-osmotic behaviour of, A., 905.
 dialysing and pervaporating, manufacture of, (P.), B., 583.
 non-living, stationary states at, A., 163.
 protein-cellulose, properties of, A., 301.
- Menhaden oil**, fatty acids in pigs fed on, A., 380.
- Menisarine**, and its salts and derivatives, A., 243.
- Menoformone**, A., 1462.
 separation of, from the male sexual hormone, A., 527.
 effect of, on milk secretion, A., 771.
 determination of, colorimetrically, A., 1195.
- Menstruation**, mineral content of blood in, A., 384.
 lipid metabolism during, A., 384.
- Mentha pulegium**, essential oil from, B., 945.
- Menthan-3-acetolactones**, chloro-, A., 961.
- Menthane-3-acetic acid**, 1:4-dichloro-, methyl ester, A., 961.
- Menthane-3-aceto-4-lactone**, A., 961.
- Menthane-3-malono-1:4-dilactone**, A., 961.
- Menthanol-3-acetolactones**, A., 961.
- Menthenes**, manufacture of, (P.), B., 434.
- Menthene-3-aceto-4-lactone**, A., 961.
- 4²-p-Menthene-1:4-diol**, and its oxidation derivative, A., 735.
- dl-Menthol**, resolution of, A., 358.
- l-Menthol**, fused, rotation of, A., 787.
 aliphatic and aromatic ethers of, A., 1159.
- i-Menthol**, preparation of, (P.), B., 386.
- Mentholacetic acid**, methyl ester, A., 961.
- Mentholglycuronic acid**, biosynthetic, structure of, A., 1086.
- Menthone**, production of, (P.), B., 386.
- Menthone series**, A., 94, 229, 358.
- l-Menthoxycetic acid**, derivatives of, A., 1159.
- Menthyl hydrogen phosphates**, A., 229.
- l-Menthyl esters** of *n*-aliphatic acids, growing chain effects in, A., 1160.
 2:4-dinitrophenyl, phenyl and picryl ethers, A., 1160.
- Menthylamines**, condensation of, with oxymethyleneecamphors, A., 94.
 optically active, characterisation of, and their acyl and camphor-10-sulphonyl derivatives, A., 229.
- neoMenthylamines**, hydrobromides of, A., 94.
- iso- and neo-Menthylaminomethyleneecamphors**, A., 94.
- Merbaphen**, toxicity of salyrgan and, A., 870.
- Mercaptans**, production of, from petroleum naphtha, etc., (P.), B., 916.
 parachors of, A., 1001.
 action of nitrosyl chloride on, A., 820.
 aliphatic, decomposition of, in alkali solutions, A., 63.
 thermal decomposition of, in organic solvents, A., 1393.
- 2-Mercaptoanisole**, 5-amino-, A., 839.
- Mercaptobenzthiazoles**, manufacture of, (P.), B., 579.
- 9-Mercapto-2:5-diketo-4-(3'-methyl-4'-hydroxy-5'-mercapto-phenyl)-7-methylphenoxthine**, 3-chloro-, A., 1289.
- Mercaptosulphonic acids**, metallic salts, (P.), B., 180*.
- Mercapturic acid**, effect of fasting and protein feeding on formation of, A., 1451.
- Mercurisation**, machines for, (P.), B., 18.
 of cotton fabrics, (P.), B., 923.
 iodine test for, B., 800.
- Mercurising liquors**, wetting out agents for, (P.), B., 1008.
- Mercurialis annua**, respiration and sugar content in male and female plants of, A., 1465.
- Mercurimetry**, A., 450.
- Mercurochrome**, correlation of chemical and toxicity tests on, B., 862.
- Mercurochrome "220"**, assay of, B., 274.
- Mercury**, structure and isotopes of, A., 1345.
 nuclear moment and hyperfine structure of, A., 993.
 production of, from its ores, (P.), B., 303.
 cleaning of, (P.), B., 813.
 spectrum of, A., 664, 888.
 intensity distribution in, A., 277.
 line structure in, A., 541.
 photo-electric intensity measurements in, A., 137.
 by electrodeless discharge, A., 8.
 addition and subtraction potentials in, A., 8.
 absorption spectrum of, A., 8, 993.
 and energy of dissociation, A., 780.
 arc spectrum of, A., 541.
 arc and spark spectra of, in the electrodeless discharge, A., 1345.
 band spectrum of, A., 276.
 continuous spectrum of, A., 8, 1204.
 emission spectrum of, A., 780.
 fluorescent band spectrum of, A., 1345.
 high-frequency spectrum of, A., 1104, 1345.
 infra-red spectrum of, A., 1345.
 molecular spectrum of, A., 664, 888.
 resonance spectrum of, A., 541, 993.
 spark spectra of, A., 540.
 ultra-violet band spectrum of vapour of, A., 1204.
 fluorescence of, A., 8, 137, 540, 1204.
 influence of adsorbed gas layers on optical constants of, A., 1366.
 quenching of resonance radiation of, A., 1343.
 photo-electric effect of, at low temperatures, A., 406.
 high frequency discharges in, A., 276.
 potential of, in hydrazine solutions, A., 449.
 ultra-ionisation potentials in vapour of, A., 1204.
 electro-capillary curve of, A., 570.
 apparatus for measurement of excitation functions for, A., 664.
 atoms, optical measurements on, A., 276.
 two-volt term in, A., 780.

- Mercury atoms, reflexion of, from alkali halide crystals, A., 1207.**
 capture of electrons from, by positive ions of helium, A., 665.
 excited, fluorescence of, A., 137.
 influence of temperature and pressure on absorption of, in neon, A., 276.
 metastable, life and radius of, A., 1209, 1349.
 vapour pressure of, A., 295.
vapour, generator for, (P.), B., 658.
 spectrum of mixtures of ammonia and, A., 1210.
 X-ray absorption coefficient of, A., 1105.
 excitation of fluorescence of, A., 1204.
 diffraction of electrons in, A., 542.
 ionisation of, by electron impact, A., 665, 1105.
 ionised, recombination in, A., 404.
 scattering of electrons by, A., 782.
 scattering of X-rays by, A., 665.
 analysis of negative ions in, A., 140.
 sputtering of cathodes in, A., 1206.
 photochemical reaction between nitric oxide and, A., 442.
 boilers for, (P.), B., 139, 517, 569.
 automatic still for, A., 190.
 solid, crystal structure of, A., 27.
 thermal expansion and atomic heat of, A., 1117.
 optical constants of, A., 8.
 adsorption on, A., 1119, 1120.
 adsorption of, from ointments, A., 119.
 surface tension of, A., 788, 1114.
 films, A., 299.
 photo-electric properties of, A., 1106.
 unimolecular, A., 34.
 solubility of gold in, A., 794.
 reaction of hydrogen sulphide with, A., 808.
 removal of gold from, A., 321.
 precipitation of, in the Kjeldahl method, A., 1384.
 occurrence of, in urine and faeces, A., 1088.
 colloidal, working up of emulsions of, B., 929.
 dissolved, absorption spectrum of, A., 540.
 finely-divided, absorption of, A., 518.
- Mercury alloys, transport numbers and potentials of, A., 1236.**
 dental, absorption of mercury from, A., 1088.
 with lanthanum and neodymium, preparation of, A., 805.
 with silver, X-ray structure of, A., 1224.
 with sodium, electrolysis of, A., 569.
 with strontium, A., 158.
 with thallium, free energy of formation of, A., 567.
 with titanium, uranium and vanadium, A., 1377.
- Mercury bases (*mercurianmines*), A., 808, 1139.**
- Mercury compounds, chemotherapy of, A., 387.**
 effect of soaps on germicidal properties of, A., 987.
- Mercury ammonium salts, use of, in quantitative analysis, A., 1260.**
 halides, absorption spectra of, A., 1350.
 heats of formation of, A., 432.
 hydride, optical excitation of band spectrum of, A., 137.
 mercuric bromide, crystal structure of, A., 671.
 chloride paper, holder for, in Gutzeit test, A., 55, 457.
 halides, dissociation of, A., 431.
 reactions of, with sulphuric acid, A., 50.
 iodide, effect of light on formation of banded precipitates of, A., 1378.
 study of, with differential gas dilatometer, A., 1222.
 stabilisation of solutions of arsenious iodide and, B., 274.
 compounds of potassium iodide and, A., 695.
 sulphate, fusion diagrams of, with mercuric bromide and with mercuric chloride, A., 169.
 sulphates, products of halogen acids and, A., 50.
 iodosulphates, A., 695.
- Mercurous chloride, determination of, A., 813.**
 iodide, preparation of, A., 1020.
- Mercurides of the rare metals, A., 1381.**
- Mercury organic compounds, formation of, by means of mercury acetamide, A., 943.**
 manufacture of, (P.), B., 946.
 manufacture of basic bismuth salts of, (P.), B., 366.
 with *m*-cresol, (P.), B., 698.
 containing heterocyclic rings, formation of, A., 106, 244.
 acetylenic, constitution of, A., 65.
 water-soluble, germicidal properties of, B., 744.
 therapeutic, A., 637.
- Mercury organic compounds:—**
 Mercury selenocyanatoammines, A., 808.
 Mercuric *tert*-amyl and *tert*-butyl sulphides, A., 821.
 chlorides, aromatic, preparation of, from aromatic diazonium chlorides, A., 373.
 Mercuribenzoic acid, *m*-chloro-, and *m*-hydroxy-, acetyl derivative, A., 244.
 Mercuri-*p*-benzylphenol, dichloro-, A., 1078.
 Mercuricyclohexylphenols, dichloro- and dihydroxy-, and their diacetyl derivatives, A., 1078.
 Mercuri-2-phenylcinchoninic acids, 3-hydroxy-, and its acetyl derivative, A., 1435.
 Mercurisalicyclic acid, dicyano-, potassium salt, A., 1053.
 Mercuri*l*ithiobisantipyrine, formation of, A., 496.
 determination of carbon and hydrogen in, microchemically, A., 374.
- Mercury detection and determination:—**
 detection of, in the organism, A., 662.
 determination of, A., 1025.
 as periodate, A., 1385.
 microchemically, A., 588.
 spectroscopically, A., 328.
 in air, A., 589.
 in its cyanide, A., 187.
 in insecticides, B., 647.
 in medicinal preparations, B., 993.
 in grey mercury ointments, B., 1027.
 in mixtures with arsenic, copper, and iron, A., 1142.
 in plant tissues, A., 1201.
 in pharmaceutical preparations, B., 88.
- Mercury arc, luminous vapours from, A., 993.**
- Mercury dusts, organic, treatment of pea-seed with, B., 458.**
- Mercury ions, electron recombination with, A., 1347.**
- Mercury switch. See Switches.**
- Merulius lacrymans*, rotting of spruce wood by, A., 886.**
- Mesaconic acid, preparation of, A., 824.**
 identification of, and its hydrazide, A., 1036.
- Mesaconic acids, determination of, bromometrically, A., 935.**
- Mesidine, methylation of, and its derivatives, A., 950.**
- Mesityl oxide, action of iodine on, A., 821.**
- Mesitylacetonitrile, A., 1292.**
- Mesitylene, preparation of, A., 207.**
- Mesitylene, bromo-, preparation of, A., 833.**
- Mesitylenesulphon-*n*-amylamide, A., 340.**
- Mesitylenesulphon-*n*-butylamide, A., 340.**
- Mesitylenesulphon-*n*-heptylamide, A., 340.**
- Mesitylenesulphon-*n*-hexylamide, A., 340.**
- Mesitylenesulphon-*n*-propylamide, A., 340.**
- Mesobilirubin, synthesis of, and its isomerides, and their derivatives, A., 1420.**
- K-Mesobilirubin, and its methyl ester dihydrochloride, A., 497.**
- Mesobilirubinogen, synthesis of, A., 1420.**
- K-Mesobilirubinogen, A., 497.**
- Mesoesterhæm, A., 634.**
- Meso hæm, A., 634.**
- Mesomorphism, A., 898.**
 in relation to amorphous and colloid systems, A., 898.
- Mesophases, optics of, A., 895.**
- Mesoporphyrins, and their salts and derivatives, A., 240.**
- Mesoxalic acid 2:4:6-trichlorophenylhydrazone, A., 1046.**
- Mesquite gum. See under Gum.**
- Metabolism, effect of irradiation on, A., 1330.**
 effect of mitogenetic irradiation on, A., 389.
 in relation to chromosome structure, A., 646.
 balance studies in, A., 980.
 effect of dextrin feeding and of fasting on, A., 979.
 of Australian aborigines, A., 646.
 of fasting albino rats, A., 254.
 of tissues, A., 646.
 of women, A., 869.
 acetaldehyde, A., 258.
 of amines, A., 762.
 of amino-acids, A., 1185.
 animal, on carbohydrate-free diets, A., 771.
 arginine, A., 255.
 basal, of women, influence of proteins in diet on, A., 256.
 bile salts, A., 761.
 calcium, A., 118.
 in relation to bone formation, A., 1327.

- Metabolism, calcium and phosphorus, A., 1451.**
 in dairy cows, A., 869.
 carbohydrate, A., 512.
 bile acids in, A., 386, 763.
 effect of buffer mixtures on, A., 116.
 action of various materials on, A., 763.
 after guanidine deglycogenation, A., 259.
 in hypertension, A., 865.
 of higher plants, A., 391.
 in blood and organs, A., 377.
 and intermediary protein, A., 645.
 carbohydrate intermediary, A., 512, 766, 1086.
 cholesterol, A., 505.
 creatine-creatinine, A., 1085, 1450.
 dextrose, in fasting dogs, A., 762.
 fat, of liver, A., 126.
 incorporated into the body, A., 1450.
 fat and glycogen, of resting and exercised rats, A., 1084.
 galactose, A., 646.
 gaseous, dependence of, on p_{H_2} , A., 761.
 of glutathione and other cystine derivatives, A., 1182.
 intermediary histidine, A., 513.
 iron, A., 258.
 of sugars, A., 762.
 iodine, A., 760, 761.
 of normal and thyroidectomised goats, A., 1185.
 lipin, A., 648.
 lipid, relation between ovarian function and, A., 384.
 manganese, in rats, A., 516.
 mineral, of cattle, derangement of, by disease, A., 383.
 of dogs during inanition, A., 118.
 nitrogen, A., 118.
 in higher plants, A., 660.
 of children, A., 385.
 partition of urinary nitrogen in, A., 648.
 phosphate, A., 118.
 phosphorus, A., 859, 864.
 in embryonic life, A., 1326.
 phospholipin, A., 1183.
 protein, effect of salts on, A., 1326.
 of pyrimidine bases, A., 647.
 of sugars intravenously injected, A., 115.
 sulphur, of dogs, A., 1182, 1450.
 tartrates, A., 1450.
 of trilaurin and triocoin, A., 760.
 tryptophan, A., 868.
 intermediary, A., 513.
 urea, rôle of stomach in, A., 385.
Metacholesterol, A., 1412.
Metals, and their alloys, A., 695.
 pure, allotropy of, A., 673.
 theory of, A., 1113.
 electron theory of, A., 18, 790.
 constitution of, A., 674.
 effects of impurities in, B., 928.
 on structure, A., 898.
 investigation of fibre structure and strains in, A., 1217.
 preparation of, by electrolysis of fused salts, B., 722.
 production of, from their ores, (P.), B., 723, 847.
 from their sulphates, (P.), B., 630.
 and their oxides, (P.), B., 1093.
 containing hydrocarbons, (P.), B., 28.
 pure, production and properties of, A., 324.
 recovery of, from ores, etc., (P.), B., 547, 764.
 from residues, (P.), B., 28.
 from waste materials, B., 117.
 furnaces for, (P.), B., 1057.
 electrodeposition of, (P.), B., 165*, 167, 208, 303, 354.
 apparatus for, on tubes, (P.), B., 165*.
 limiting currents for, A., 1238.
 gravimetric, B., 68.
 electrolytic solution and deposition of, A., 570.
 refining of, in electric induction furnaces, (P.), B., 723.
 cathodes for electrolytic refining of, (P.), B., 891.
 and their alloys, refining agent for, (P.), B., 1101.
 cleansing agent for, (P.), B., 676.
 cleaning of surfaces of, (P.), B., 165*, 209*.
 crystallography of mechanical properties of, A., 552; B., 761.
 influence of occluded gases on mechanical properties of, B., 680.
Metals, melting of, in coreless induction furnaces, (P.), B., 723.
 furnace for, (P.), B., 593.
 pots for, (P.), B., 593.
 electric furnaces for smelting of, (P.), B., 1058.
 furnaces for treatment of, (P.), B., 257.
 effect of high-frequency oscillations on treatment of, B., 206.
 furnaces for annealing of, (P.), B., 723.
 annealing or heat-treatment of, (P.), B., 889.
 casting of, (P.), B., 28, 448, 497, 593, 639.
 moulds for, (P.), B., 889.
 sand moulds for, (P.), B., 1101.
 casting or moulding of, (P.), B., 1144.
 hardening of, A., 417.
 case-hardening of, (P.), B., 847.
 furnaces for, (P.), B., 810.
 "Meyer hardness analysis" of, B., 68.
 notched-bar impact test for, B., 592.
 notched-bar bending tests of, B., 545.
 deformation of, under loading, B., 445.
 deformation in tensile test pieces of, B., 977.
 strength of, at high temperatures, B., 977.
 caustic embrittlement of, B., 1057.
 heat-treatment of, (P.), B., 1144.
 furnaces for, (P.), B., 638.
 salt-bath, (P.), B., 682, 980.
 fatigue of, B., 977, 979.
 under alternating torsion, B., 761.
 testing of, in Germany, B., 979.
 fatigue and resistance to slip of, B., 252.
 determination of refractive index and coefficient of absorption of, A., 30.
 spectra of, bombarded by low-speed electrons, A., 781.
 obtained by explosive reactions, A., 1203.
 effect of pressure on, A., 991.
 and their salts, mass spectra of, A., 546, 1108.
 reflexion by, A., 30.
 infra-red reflexion by, A., 1111.
 reflexion atoms of, from oil surfaces, A., 162.
 broadening of lines in X-ray diagrams of, A., 896.
 determination of reflectivity of, for ultra-violet rays, A., 329.
 photo-electric effect in, A., 542.
 effect of temperature on, A., 1106.
 effect of polishing on photo-electric emission from, A., 9.
 radiography of, B., 118.
 electron emission from, bombarded with positive ions, A., 1347.
 free electrons in, A., 139.
 liberation of electrons from, by positive ions, A., 139.
 extraction of electrons from, A., 1107.
 velocity of electrons scattered from, A., 139.
 molecular sphere of action of, A., 1216.
 collision of, with organic molecular beams, A., 1001.
 bombardment of, with hydrogen canal rays, A., 1347.
 electric and magnetic properties of, A., 1220.
 electrical conductivity of, A., 1221.
 influence of protons on, A., 792.
 and optical absorption, A., 999.
 and protons, A., 1112.
 electrical conductivity and structure of thin layers of, A., 1112, 1221.
 pure, resistance of, at low temperatures, A., 292.
 electric current in relation to heat, magnetic and acoustic disturbance of, A., 790.
 potential between, in relative motion, A., 1112.
 electrokinetic potential of, A., 687.
 measurement of contact potentials between, A., 290.
 contact potentials between insulators and, A., 291.
 reactivity and overvoltage of hydrogen at surfaces of, A., 570.
 transport numbers of, in electrolysis of their alloys, A., 433.
 magnetic susceptibility of, at low temperatures, A., 673.
 effect of cold-working on, B., 1054.
 effect of internal stress on, A., 154, 673.
 influence of electromagnetic waves on resistivity and hardness of, B., 846.
 ferromagnetic saturation of, A., 791.
 Volta effect for, A., 290.
 thermal emission from, A., 1361.
 heats of condensation of electrons on, in ionised gases, A., 13.
 influence of cold-working on specific heat of, A., 1117.
 effect of drawing on specific heat of, A., 155.
 liquid, Hall effect in, A., 1220.

Metals, liquid, mechanism of cooling and solidification of, B., 1097.
 surface tension of, A., 1114.
 nuclei formation in, A., 1115.
 molten, heat of mixture in, A., 296.
 solid influence of temperature on diffusion coefficients of, A., 1364.
 solid and liquid, measurement of true specific heats of, at high temperatures, A., 293.
 effect of cold-working on density and electrical resistance of, B., 592.
 elasticity of, in relation to temperature, A., 674.
 importance of crystal structure for elastic limit and endurance of, B., 444.
 diffusion of, A., 1118.
 interdiffusion of, with compound formation, A., 1223.
 kinetics of solid solutions of, A., 301.
 automatic maintenance of solid-liquid equilibria in, A., 169.
 theory of solution of, A., 436, 1242.
 solution of, in acids, A., 176, 1373.
 production of single crystals of, A., 416.
 growth of crystals of, in metal vapour, A., 1115.
 electrical conductivity of mixed crystals of, A., 158.
 plasticity of crystals of, A., 156.
 velocity of solution of, in acids, A., 437.
 resistance of, to salt solutions, B., 495.
 passivity of, A., 46.
 corrosion of, A., 574, 1133; B., 1099.
 theory of, A., 691.
 initial rates of, B., 681.
 atmospheric, B., 763.
 by liquid fuel, B., 298.
 by phosphoric acid, B., 495.
 in soils, B., 1100.
 protection of, from corrosion, (P.), B., 980.
 by electrodeposition of lead dioxide, B., 845.
 by metal films, B., 1101.
 with sodium dichromate, B., 1100.
 and their alloys, B., 25.
 protective treatment of, (P.), B., 209*.
 cathodic protection of, B., 446.
 protection of, against frost, (P.), B., 165.
 rust-proofing of, (P.), B., 811, 847.
 coating of, (P.), B., 1015.
 with phosphates, (P.), B., 765*.
 with synthetic resin, (P.), B., 262.
 coating of articles with, (P.), B., 1101.
 chromium plating of, (P.), B., 256.
 pickling of, (P.), B., 68*.
 baths for, and their inhibitors, (P.), B., 301.
 inhibitors for, (P.), B., 352, 593, 638, 811, 1103.
 rubber lining for tanks for, B., 846.
 pickling and etching of, B., 444.
 oxidation inhibitor for, (P.), B., 165.
 influence of temperature and pressure on extrusion of, B., 444.
 action of anhydrides on, A., 921.
 effect of carbon tetrachloride, trichloroethylene and tetra-
 ohlorethane on, B., 206.
 action of nitric acid on, in presence of hydrazine, A., 1134.
 action of phosphoric acid on, B., 844.
 action of potable liquids on, B., 398.
 action of salts and their solutions on, B., 637.
 affinity of, for sulphur, A., 169.
 formation of sulphide films on, A., 1377.
 bomb for reduction of, (P.), B., 1057.
 high-pressure gas-charging of, A., 154.
 synthesis of compounds of gases with, by cathodic sputtering,
 A., 810.
 rendering visible filed-out impressions in, B., 1054.
 application of varnishes, etc., to surfaces of, (P.), B., 73.
 preparation of, for painting, (P.), B., 165, 354*.
 ornamentation for, (P.), B., 354.
 in bright-gold lustre used for decoration of ceramics, B., 720.
 production of wood-like colour and grain on surfaces of, (P.), B.,
 165.
 removal of oil from chips of, (P.) B., 354.
 cement for, (P.), B., 354.
 sealing of objects of, to insulating material, (P.), B., 29.
 for high-temperature service, B., 117.
 for high pressure and temperature apparatus, testing of, B., 545.

Metals in food, regeneration of hæmoglobin by, A., 858.
 use of, in dairies, B., 363.
 attack of insects on, B., 681.
 behaviour of, towards disinfectants, B., 206.
 fixation of, by inflamed areas, A., 253.
 local detection of phosphides on surfaces of, B., 299.
 microchemical and luminescence-analytical examination of
 surfaces of, B., 722.
 spectro-analysis of foreign elements in, A., 187.
 detection of, in minute amounts, A., 778, 1260.
 use of phenolic acids in detection, determination, and separation
 of, A., 813.
 determination of, in rocks, A., 700.
 in solutions, spectrographically, A., 1260.
Metals, alkali. See Alkali metals.
 alkaline-earth. See Alkaline-earth metals.
 of the aluminium group, analysis of, A., 454.
 of the ammonium hydroxide group, use of hexamethylene-
 tetramine for determination of, A., 1261.
 cold-rolled, measurement of diameter of Brinell indentations in,
 B., 1054.
 cold-worked, latent energy in, A., 1005.
 colloidal, toxicity of, towards *Cercaria*, A., 1188.
 crystalline, sizes and electronic states of atoms in, A., 543, 1217.
 of high crystallising speed, production of ingots of, (P.), B., 208.
 diamagnetic, dependence of susceptibility of, on the field, A.,
 411.
 electrodeposited, hardness testing of, B., 545.
 electrolytic, dilatation and measurement of tension in, B., 846.
 hardness and hydrogen content of, B., 592, 682.
 electropositive, action of alkali amides on, A., 580.
 ferromagnetic, specific heat of electricity in, A., 553.
 effect of temperature on resistance of, A., 552.
 galvanoplastic, manufacture of articles by electro-deposition of,
 (P.), B., 167.
 of Group II, qualitative analysis of, A., 328.
 of Group VIII, higher oxides of, A., 324.
 heated, pyrometry and radiation properties of, A., 542.
 heavy, salts of, as fixatives, A., 1321.
 quinoline as microchemical reagent for, A., 188.
 detection of, colorimetrically, A., 328.
 microchemically, A., 701.
 with picric acid and ammonia, A., 927.
 of the hydrogen sulphide group, determination and separation
 of, A., 1261.
 incandescent, electron emission by, A., 782.
 of the iron group, magneton numbers of, A., 411.
 salts, gyromagnetic effect for, A., 1216.
 light, production of, by electrolysis, (P.), B., 303.
 X-ray investigation of space-lattice distortion in, A., 1217.
 electric furnace for melting of, (P.), B., 640.
 high-melting, casting of, (P.), B., 725.
 non-ferrous, refining of, (P.), B., 890.
 flux for purification of, (P.), B., 890.
 refining grain structure of, (P.), B., 812.
 use of electric furnaces for bright annealing of, B., 1014.
 dependence of cold-rolling on rate of solution of, B., 351.
 and their alloys, use of, in marine engineering, B., 846.
 spectrographic analysis of, B., 1014.
 of the platinum group, electro-deposition of, (P.), B., 814*.
 porous, manufacture of, (P.), B., 208.
 powdered, reactivity of, A., 1243.
 behaviour of, under pressure, A., 1221.
 precious, apparatus for recovery of, from ores, (P.), B., 891.
 catalytic, manufacture of, (P.), B., 548.
 precipitated from vapour, adsorption of gases by, A., 1129.
 rare, production of oxides of, (P.), B., 200.
 reactive, deposition of, on noble metals, A., 441.
 scrap, melting of, (P.), B., 255.
 volatile, recovery of, from slag, (P.), B., 638.
 apparatus for distillation of, (P.), B., 68.
 white, removal of antimony from, B., 591.
Metal castings, composite, production of, (P.), B., 119.
Metal filaments, hot, reactions at surface of, A., 176, 576.
Metal films, structure and light absorption of, A., 560.
 structure and specific resistance of, A., 792.
 transmission of light by, A., 665.
 electrical conductivity of, A., 792.
 obtained by thermal vaporisation and cathodic sputtering, A.,
 673.

- Metal films**, thin, production of, by cathodic sputtering, A., 805.
photo-electric effect in, A., 1212.
electrical conductivity and structure of, A., 1212, 1360.
colour of, A., 1104.
- Metal foil**, electrodeposition of, A., 1377.
secondary electronic emission from, A., 140.
scattering of electrons by, A., 1347.
thin, conductivity of, A., 291.
- Metal goods**, enamelled, spraying of, in patterns, (P.), B., 396.
- Metal layers**, production of, (P.), B., 448.
- Metal mirrors**. See under **Mirrors**.
- Metal pipes**, flow of gases through, B., 465.
- Metal plates**, insulated, effect of, on membranes, A., 795.
- Metal powders**, preparation of, by electrolysis of fused salts, B., 118.
floatable, formation of, (P.), B., 933.
lamelliform, production of, (P.), B., 209.
- Metal rods**, cooling-water treatment of, (P.), B., 303.
- Metal sheets**, coating of, with asphalt, (P.), B., 1144.
- Metal sponge**, production of, (P.), B., 449.
- Metal strips**, heat-treatment of, (P.), B., 723.
- Metal wires**, electric and mechanical effects in, A., 1360.
effect of torsion on length of, B., 763.
chromium plating of, (P.), B., 933.
glowing, vacuum evaporation of, A., 1349.
- Metallic articles**, production of, by electrodeposition of metals, (P.), B., 167.
annealing of, (P.), B., 496.
heat treatment of, (P.), B., 632, 810, 1101.
electric salt-bath furnaces for, (P.), B., 724.
electroplating of, (P.), B., 1103.
coating of, (P.), B., 932.
with aluminium, (P.), B., 890.
with an iron-chromium-silicon alloy, (P.), B., 811.
with nickel-chromium films, (P.), B., 980.
with tungsten and molybdenum bronzes, (P.), B., 1058.
coating and colouring of, (P.), B., 1103.
removal of lead coatings from, (P.), B., 812.
corrosion of, on storage and protective coatings therefor, B., 977.
production of coloured patterns on, (P.), B., 1050.
cylindrical, protective coating of, (P.), B., 765.
- carbonyls**, A., 1255.
- coatings**, electroplated, adhesion of, B., 446.
thin, hardness testing of, B., 545.
- chlorides**, anhydrous, manufacture of, (P.), B., 631.
- halides**, spectroscopy of dissociation of, in solution, A., 1210.
anhydrous, crystal structure of, A., 1001.
solid, reactions of, with alkaline-earth oxides, A., 803.
- hydrides**, properties of, A., 1127.
- hydroxides**, production of, (P.), B., 112.
- nitrates**, manufacture of, (P.), B., 157*.
- oxides**, isomorphism of, A., 157.
reduction of, (P.), B., 812.
porous, manufacture of, (P.), B., 208.
- peroxides** as sources of hydrogen peroxide, B., 1091.
- salts**, production of, by electrolysis, (P.), B., 848.
electrolytic dissociation of, A., 1126.
dissociation of, in water, A., 1126.
complex compounds of organic compounds with, A., 412.
of heavy metals, properties of soap complexes of, A., 870.
See also **Salts**.
- sulphides**, solubilities of, in water, A., 1225.
- surfaces**, protection of, in sewage, B., 996.
- vapours**, utilisation of, for heating, (P.), B., 93.
- Metallisation**, apparatus for, (P.), B., 593.
of textiles, (P.), B., 347.
- Metallography**, boundary fields of, B., 888.
- Metalloids**, compounds of, with transition elements, A., 1215.
- Metallurgical slimes**, treatment of, (P.), B., 889.
- Metallurgy**, progress of, B., 980.
use of cyanides in, B., 971.
- Metaoxidase**, A., 122.
- Metaphosphates**. See under **Lead**.
- Metastable states**, duration of, A., 781.
- Metastability of matter**, A., 677.
- Meteor cradle**, Arizona, formation of, A., 332.
- Meteoritic iron**, Mbosi, Tanganyika, A., 1028.
from Mexico, A., 931.
- Meteorites**, composition of, A., 1389.
elements in, A., 1145.
helium content of, A., 327.
Barringer, A., 332.
iron, from Mexico, A., 1265.
Karoonda, A., 706.
Samelia, A., 1265.
Tilden, A., 1389.
- Methæmoglobin**, formation of, by anti-anæmic organ extracts, A., 1323.
and fluoro-, preparation of, A., 376.
production of, A., 857, 1319.
crystalline, from horse-blood, A., 247.
- Methane**, formation of, from benzene, toluene, and *m*-xylene, A., 1043.
during electrolysis of potassium acetate, A., 193.
catalytic formation of, A., 1376.
synthesis of, (P.), B., 471.
transformation of, A., 1030.
absorption spectrum of, A., 20.
action of electric discharge on, B., 429.
effect of electric discharge on mixtures of steam, carbon dioxide and, B., 186.
dissociation and oxidation of, in the electric discharge, A., 919.
collisions of molecules of, with electrons, A., 12.
value of *C*, for, A., 792.
specific heat of, A., 674.
heat capacities of three varieties of, A., 1216.
heat of combustion of, A., 433, 1236.
solid, B., 1003.
compressibility isotherms of, A., 417.
viscosity of, A., 1118.
crystal structure of, A., 790, 1002.
entropy and free energy of, A., 675.
physical constants of mixtures of hydrogen and, A., 417.
equilibrium of steam with, B., 325.
catalytic decomposition of, A., 1377.
with zinc oxide, A., 804.
thermal decomposition of, A., 915; B., 574.
thermal decomposition of mixtures of water vapour with, (P.), B., 331, 433.
pyrolysis of, B., 193.
partial combustion of, B., 230.
slow combustion of, A., 1147.
combustion of, by means of copper oxide, A., 1015.
with hydrogen and coal gas, A., 1371.
ignition of mixtures of, with oxygen, nitrogen, argon, or helium, A., 1240.
explosions of mixtures of air and, A., 689.
oxidation of, by combustion, A., 1030.
to carbon monoxide and hydrogen, A., 693.
to methyl alcohol, A., 698.
in presence of oxides of nitrogen, B., 796.
conversion of, into liquid hydrocarbons, B., 527.
catalytic conversion of gases containing, into carbon monoxide and hydrogen, B., 325.
thermal chlorination of, A., 332, 1372.
electric lamps for use in atmospheres containing, (P.), B., 726.
reduction of limonite and magnetite by, B., 442.
derivatives, optically active, configurational relationship of, A., 709.
as a motor fuel, B., 328.
manufacture of hydrogen-nitrogen mixtures from gases rich in, B., 326.
manufacture of oxygenated organic compounds from steam and, (P.), B., 194.
analysis of mixtures of hydrogen, ethane, and, A., 54, 450.
determination of, in small quantities, A., 1391.
in the Orsat apparatus by Jäger's method, B., 791.
in air, A., 586.
See also **Firedamp**.
- Methane**, dichloro-, X-ray scattering of, A., 26.
dichlorodifluoro-, thermodynamic properties of, A., 675.
dichlorodinitro-, and trichloronitroso-, A., 1150.
monohalogen derivatives, Raman effect with, A., 284.
nitro-, preparation of, A., 333, 461.
conductivity of electrolytes in, A., 311.
latent heat of vaporisation of, A., 155.
condensation of, with aromatic aldehydes, in presence of alcoholic sodium hydroxide, A., 1417.

- Methane, *tetranitro*-, and its mixture with toluol, B., 136.
 Methanes, chloro-, interferometer measurements with, A., 788.
 trisubstituted, containing a phenyl group, optically active, A., 1413.
 Methane series, isomers in, A., 1147.
 Methanedisulphonic acid, phenyl ester, action of hydrazine hydrate on, and its ammonium salt and esters, A., 1033.
 Methanedisulphonic acid, nitro-, and its salts, A., 64.
 Methanesulphonic acid, salts of, A., 1033.
 Methanesulphonic acid, iodo-, and its homologues and salts, (P.), B., 1132.
 Methanesulphonylethanesulphonylmethane, A., 1394.
 Methanesulphonylethanesulphonylphenylthiomethane, A., 1394.
 Methanetetrasulphonic acid, A., 464.
 Methanetricarboxylic acid, chloro-, ethyl ester, A., 822.
 Methanetrisulphonic acid, preparation of, and its salts, A., 64, 1394.
 Methanetrisulphonic acid, thiol-, structure of, and its salts, A., 600.
 ammonium, potassium, and thalious salts, A., 672.
 Methanol series, number of structural isomers of, A., 1148.
 Methionamic acid, salts of, A., 1033.
 Methionine. See Methanedisulphonic acid.
 Methionine, synthesis of, A., 1279.
 apparent dissociation constants of, A., 1233.
 Methionines, and their derivatives, A., 1279.
 1-Methoxy-8-acetoglucoxyanthraquinone, A., 826.
 3-Methoxyacetophenone, ω :4-*di*hydroxy-, and its sodium salt and 4-acetyl derivative, A., 1425.
 4-Methoxyacetophenone, 2-hydroxy-, complex nickel and copper salts of, A., 485.
 Methoxyacetophenoneimines, hydroxy-, complex nickel salt of, A., 486.
 β -Methoxy- α -acetoxymercuri- β -phenylpropionic acid, *d*-bornyl ester, A., 502.
 2-Methoxy-4-acetoxy- α -phenylcinnamionitrile, A., 620.
 4'-Methoxy-6-acetylflavone, 7-hydroxy-, A., 1305.
 β -Methoxyamino- α -benzamido- β -2-furylpropionic acid, A., 232.
 3-Methoxyaminobenzoylsalicylic acids, methyl esters, hydrochlorides of, A., 483.
 6-Methoxy-8-aminoquinoline-*N*-methylenesulphonic acid, sodium salt, A., 1167.
 ϵ -Methoxy-*n*-amyl alcohol, A., 1033.
 ϵ -Methoxy-*n*-amyl chloride, A., 1033.
N-Methoxyamylamine, *N*-nitroso-, A., 1286.
 9-Methoxy-9-*p*-anisylfluorene, A., 1059.
 6-Methoxy-2-anisylquinoline, 4-hydroxy-, A., 630.
 6-Methoxy-2-anisylquinoline-3-carboxylic acid, 4-hydroxy-, ethyl ester, A., 630.
 Methoxyanthraquinone, 4-chloro- and 1-hydroxy-, A., 846.
 Methoxyanthrones, and 10-bromo-, A., 1294.
 and hydroxy-, and their acetyl derivatives, A., 355.
 4-Methoxyazobenzene-4'-sulphonic acid, A., 344.
 3-Methoxybenzaldehyde, 2-chloro-4-hydroxy-. See Vanillin, 2-chloro-.
 4-Methoxybenzaldehyde *p*-nitrophenylhydrazone, A., 834.
 4-Methoxybenzaldehyde, 2:5-*di*hydroxy-, A., 73.
 and its phenylhydrazones, A., 606.
 5-Methoxybenzaldehyde, 2:4-*di*hydroxy-, and its diacetate, A., 843.
 and its phenylhydrazones, A., 738.
 Methoxybenzaldehydes, hydroxy-, and their derivatives, A., 353.
o-Methoxybenzil, A., 489.
 α :4'-Methoxybenzil α -oxime, cobalt salt, A., 1157.
o-Methoxybenzoin, A., 489.
 2-Methoxybenzonitrile, 5-chloro-, A., 1283.
p-Methoxybenzophenone, *p*-chloro-, A., 947.
o-Methoxybenzoylbenzoic acids, hydroxy-, A., 1294.
p-Methoxybenzoyl- α -methoxyphenylcarbinol, and its semicarbazone, A., 354.
 4-Methoxy-4'-benzoyloxydiphenyl, A., 954.
 Methoxybenzoylphenylcarbinols, A., 354.
p-Methoxybenzylacetacetic acid, ethyl ester, A., 85.
p-Methoxybenzylacetone, and its derivatives, A., 85.
 α -*p*-Methoxybenzyl- β -benzylsuccinic acid, α -hydroxy-, derivatives of, A., 956.
 α -Methoxybenzylbutaldehydes, A., 1056.
 β -Methoxybenzylbutyl alcohols, A., 1056.
 9- α -Methoxybenzyl-2:4-dimethylanthracene, A., 1058.
 α -*p*-Methoxybenzylethyl methyl ketone, and its semicarbazone, A., 85.
 ω -*m*-Methoxybenzylideneacetanilide, ω -cyano-, A., 237.
 ω -*m*-Methoxybenzylideneacetate-*p*-toluidide, ω -cyano-, A., 237.
 3-Methoxybenzylidene-2-aminofluorenone, 4-hydroxy-, A., 1400.
 Methoxybenzylidenechromanone, and *mono*-, *di*-, and *tri*-hydroxy-, and their acetyl derivatives, A., 361.
o-Methoxybenzylidenedibenzyl ketone, A., 1070.
 10-Methoxy-9-benzylidene-1:3-dimethyl-9:10-dihydroanthracene, A., 1058.
 10-Methoxy-9-benzylidene-1:4-dimethyl-9:10-dihydroanthracene, A., 341.
p-Methoxybenzylidene- β -glucosamine, and its tetra-acetate, A., 830.
p-Methoxybenzylidenemalon- α -toluidic acid, A., 1155.
p-Methoxybenzylidenethiohydantoin, and its acetyl derivative, A., 1170.
p-Methoxybenzylmethylacetacetic acid, ethyl ester, A., 85.
p-Methoxybenzyl methyl ketone, and its semicarbazone, A., 85.
p-Methoxybenzyl methyl ketone, oximino-, cobalt salt, A., 1157.
 α -Methoxybenzyl- β -phenylethylsuccinic acid, A., 956.
 α -*o*-Methoxybenzylpropaldehyde, A., 1056.
 β -*o*-Methoxybenzylpropyl alcohol, A., 1056.
 α -Methoxybenzylsuccinic acid, and its anhydride, A., 86.
 β -Methoxy- α -bromomercuri- β -phenylpropionic acid, *d*-bornyl ester, A., 502.
 3-Methoxy- α -(2-bromo-4:5-methylenedioxyphenyl)cinnamic acid, 2-amino-, and 2-nitro-, A., 730.
 4-Methoxy-4-bromophenyl chlorobromomethyl ketone, A., 91.
 γ -Methoxybutanedicarboxylic acid, δ -chloro-, and its barium salt and ethyl ester, and δ -chloro- α -bromo-, ethyl ester, A., 621.
 3-Methoxycyclobutane-1:1-dicarboxylic acid, ethyl ester, A., 621.
 8-Methoxy-*n*-butyl alcohol, A., 1033.
 8-Methoxy-*n*-butyl chloride, A., 1033.
 5-Methoxy-2-*n*-butyl-1:3-diketohydrindene, 7-hydroxy-, A., 487.
 γ -Methoxybutyric acid, and its *l*-menthyl ester, A., 1160.
p-Methoxybutyrophenone semicarbazone, A., 1434.
 Methoxycamphoranilic acids, *mono*- and *di*-nitro-, A., 626.
 6-Methoxy-8-carbamidoquinoline, A., 1168.
 2-Methoxy-5-carboxy-1- α : β -*trichloroethylbenzene*, and its derivatives, A., 1054.
 Methoxyisochavibetol, separation of, from methoxyisoeugenol, A., 954.
 2-Methoxy-1- α : β -*trichloroethylbenzene*, 5-nitro-, A., 1054.
 6-Methoxy-1-chloromethyl-3:4-dihydroisoquinoline picrate, A., 365.
p-Methoxycinnamylidene, A., 1155.
 3-Methoxycinnamic acid, 6-chloro-4-hydroxy-, and its acetyl derivative, A., 90.
p-Methoxycinnam- α -toluidide, A., 1155.
 3-Methoxycoumarin, A., 1070.
 7-Methoxycoumarin, 6-hydroxy-, and its derivatives, A., 606.
 7-Methoxydehydro-*l*-thebenone, and its oxime, A., 1314.
 1-Methoxy-2:7-diacetoglucoxyanthraquinone, A., 826.
 4-Methoxydibenzylamine, and its salts and benzoyl derivative, A., 1408.
 4-Methoxydibenzylmethylamine, A., 1408.
 Methoxydigalactosidoglyouronic acid, calcium salt, A., 67.
 2-Methoxy-3:4-dihydronaphthalene, A., 214.
 5-Methoxy-1:3-diketohydrindene, 7-hydroxy-, A., 487.
 7-Methoxy-4-(3':4'-dimethoxy)phenylchroman, A., 1069.
 7-Methoxy-4-(3':4'-dimethoxy)phenylcoumarin, A., 1069.
 β -Methoxy- α -dimethylamino- α -methylenedioxyphenylpropane, and its β -hydroxy-derivative, salts of, A., 86.
 Methoxy-10-*p*-dimethylaminophenylanthrones, A., 1294.
 10-Methoxy-1:4-dimethylanthrone, A., 341.
 10-Methoxy-2:3-dimethylanthrone, and its acetate, A., 612.
 10-Methoxydimethylanthrones, A., 1058.
 2-Methoxy-4:5-dimethylbenzoic acid, A., 1295.
 1-Methoxy-1:3-dimethyl-1:2:3-benzotriazolinium methyl sulphate, 6-nitro-, A., 852.
 4-Methoxy-3:4'-dimethyldiphenylsulphone, A., 213.
 2-Methoxy-4:5-dimethylphenylstyryl ketone, A., 1295.
 5-Methoxy-1:1'-dimethylthiocyanine iodide, A., 1076.
 4-Methoxydiphenyl, 4-fluoro-2-nitro-, A., 947.
 4'-hydroxy-, and *mono*- and *tri*-nitro-4'-hydroxy-, and their acetyl derivatives, A., 954.
 4'-Methoxydiphenyl ether, 4-amino-, and its salts and acetyl derivative, 3:4-diamino-, 4-bromo-, 4-nitro-, 3-nitro-4-amino-, and its acetyl derivative, A., 479.
 4-Methoxydiphenylamine, A., 1408.
 3-Methoxy-2:4-diphenyl- d^2 -chromen, A., 1070.
 2'-Methoxydiphenyl ether-4:5'-diacrylic acid, A., 636.

- 2'-Methoxydiphenyl ether-4:5'-dialdehyde, and its derivatives, A., 636.
- 2-Methoxydiphenyl ether-4:5'-($\beta\beta$)-dipropionic acid, A., 636.
- 4-Methoxy- $\beta\beta$ -diphenylpropyl alcohol, 2-hydroxy-, A., 1069.
- 4-Methoxydiphenylsulphone-3-carboxylic acid, A., 212.
- 4-Methoxydiphenylsulphone-3:4'-dicarboxylic acid, A., 213.
- Methoxydiphenylvinylphosphinic acid, and *p*-chloro-, and their salts, A., 947.
- γ -Methoxyephedrine, and its hydrochloride, A., 350.
- and its hydrogen oxalate, A., 350.
- β -Methoxyethoxyacetic acid, and its ethyl ester, A., 197.
- 4-Methoxy-3-ethoxybenzaldehyde, A., 484.
- Methoxyethoxybenzaldehydes, 2-hydroxy-, and their phenylhydrazones, A., 73.
- 5-Methoxy-4-ethoxybenzene-1:2:3-tricarboxylic acid, synthesis of, and its derivatives, A., 1311.
- 3-Methoxy-5-ethoxybenzoic acid, A., 204.
- 3-Methoxy-4-ethoxycinnamic acid, A., 213.
- 7-Methoxy-6-ethoxycoumarin, A., 73.
- 4-Methoxy-4'-ethoxydiphenyl, and its additive compound with nitric acid, A., 954.
- $\beta\beta$ '-Methoxyethoxyethoxyacetic acid, A., 198.
- Methoxyethoxyphenols, A., 73.
- β -3-Methoxy-4-ethoxyphenylethylamine hydrochloride, A., 213.
- β -3-Methoxy-4-ethoxyphenylpropionic acid, and its amide, A., 213.
- 4-Methoxy-3-ethoxyphenylthialic acid, methylimide of, and 6-amino-, 6-cyano-, and 6-nitro-, methyl esters, A., 1311.
- 3-Methoxyethylbenzene, 4-hydroxy-. See 4-Ethylguaiacol.
- 5-Methoxy-2-ethyl-1:3-diketohydrindene, 7-hydroxy-, A., 487.
- β -Methoxyethylglycol, A., 198.
- β -Methoxyethylmalonic acid, ethyl ester, A., 710.
- p*-Methoxy- α -ethylstyryl methyl ketone, and its oxime, A., 485.
- Methoxyisoeugenol, separation of, from methoxyisochavibetol, A., 954.
- 4'-Methoxyflavanol, A., 233.
- 2'-Methoxyflavanone, 5:7-dihydroxy-. See Citronetin.
- 3'-Methoxyflavanone, 5:7-dihydroxy-, and its derivatives, A., 1162.
- 4'-Methoxyflavone, and its reduction, A., 233.
- Methoxyflavylium chlorides, trihydroxy-, A., 1423.
- r*-5-Methoxyfructosazone, A., 69.
- dl*-5-Methoxyfructosazone, A., 825.
- dl*-5-Methoxyfructose, synthesis of, A., 825.
- Methoxygalactosidoglyceronic acid, calcium salt, A., 67.
- 6-Methoxy-*d*-glucoses, and their tetra-acetates, A., 939.
- Methoxyglutaric acid, trihydroxy-, isolation of, from digitalonolactone, A., 1273.
- α -Methoxyglyceraldehyde, acetal of, A., 69.
- 5-Methoxy-*n*-heptic acid, and its *l*-menthyl ester, A., 1160.
- α' -Methoxy-*trans*-hexahydrohydrindene-2:2'-diacetic acid, α -hydroxy-, A., 728.
- 8-Methoxyhexane, γ -bromo-, A., 710.
- γ -Methoxy- Δ^7 -hexene, A., 710.
- ϵ -Methoxy-*n*-hexoic acid, and its derivatives, A., 1160.
- 1-Methoxyhydrindene, 2-bromo-, A., 215.
- 2-Methoxyhydrindene, 1-bromo-, A., 355.
- 2-Methoxyhydrindyltrimethylammonium iodide, A., 214.
- 7-Methoxy- β -(3-indolyl)propionic acid, A., 1306.
- 4-Methoxy-4-iodophenyl chlorobromomethyl ketone, A., 91.
- 5-Methoxyketose, synthesis of, A., 69.
- 6-Methoxy- α -lepidone, 5-nitro-, A., 1318.
- Methoxyl groups, apparatus for Pregl's microchemical analysis of, A., 1438.
- determination of, microchemically, A., 374.
- volumetrically, A., 107, 246.
- 4-Methoxy-3-mercaptopbenzoic acid, A., 839.
- α' -Methoxy- α -3-methoxy-4:5-methylenedioxypheylpropane, β -bromo-, A., 953.
- Methoxymethyl *ay*-dichloro- and α -chloro- γ -amyloxy-isopropyl others, A., 621.
- 3-Methoxy-10-methylacridone, and its pierate, A., 1430.
- ω -Methoxymethylaminopropiophenone, and its hydrochloride, A., 224.
- α -Methoxymethylbenzoic acid, A., 86.
- 4-Methoxy-4'-methylidibenzylmethylamine, A., 1408.
- 4-Methoxy-7-methyl-2:2'-diethyl-1:3-diketohydrindene, A., 622.
- 7-Methoxy-11-methyl-5:12-dihydroquinbenzarsazine, 12-chloro-, A., 372.
- 5-Methoxy-2-methyl-1:3-diketohydrindene, 7-hydroxy-, A., 487.
- 4-Methoxy-3-methyldiphenylsulphone, A., 212.
- 4'-Methoxy-2-methylisoflavone, 7-hydroxy-, and its acetyl derivative, A., 738.
- 7-Methoxy-11-methylquinbenzarsazinic acid, and its salts and chloride, A., 372.
- 6-Methoxy-1-methyl-2-quinoline, A., 751.
- 6-Methoxy-4-methylquinoline, 2-chloro- and 2-hydroxy-, and its hydrochloride, A., 1433.
- 8-Methoxy-5-methylquinoline, and its salts, A., 364.
- p*-6-Methoxy-2-methyl-4-quinolylamino-*p*'-aminodiphenylmethane, A., 372.
- 4':6''-Methoxy-2''-methyl-4''-quinolylamino-3:3'-dimethoxydiphenylarsinic acid, and its salts, A., 372.
- 4':6''-Methoxy-2''-methyl-4''-quinolylamino-3:3'-dimethyldiphenylarsinic acid, and its salts, A., 372.
- p*-6-Methoxy-2-methyl-4-quinolylaminodiphenylmethane-*p*'-arsinic acid, A., 372.
- α -6'-Methoxy-2-methyl-4'-quinolylaminophenylarsinic acid, and its salts, A., 372.
- 2-Methoxy-4-methylthioxanthone, 1-hydroxy-, dioxide, A., 628.
- 4'-Methoxy- β -*a*-naphthafavanone, A., 1423.
- 4'-Methoxy- α -naphthafavone, 3-anisoyl derivative, A., 963.
- 4'-Methoxy- β -*a*-naphthafavone, A., 1423.
- 8-Methoxy- α -naphthafurano-(1':2'-2:3)-benzopyryliumferrichloride, A., 737.
- 2-Methoxynaphthalene, 1-thiol-, A., 723.
- 2-Methoxynaphthalene-3-sulphinic acid, A., 479.
- 2-Methoxynaphthalene-3-sulphonic acid, and its potassium salt and derivatives, A., 479.
- 2-Methoxy-3-naphthhydrazide, A., 479.
- 2-2'-Methoxy-1'-naphthoylbenzoic acid, 3:4:5:6-tetrachloro-, A., 617.
- 3-Methoxy-3-naphthylcarbamic acid, ethyl ester, A., 479.
- 2-Methoxy-1-naphthylthiolacetic acid, A., 723.
- β -Methoxy- β -*m*-nitrophenylethane, α -bromo- α -nitro-, A., 1419.
- 1-Methoxy-3-*p*-nitrophenyl-4-methylene-3:4-dihydrophthalazine, A., 836.
- p*-Methoxyphenoxyacetic acid, A., 345.
- 2- α -Methoxyphenoxybenzophenone, A., 1305.
- p*-Methoxyphenyl selenide, A., 218.
- p*-Methoxyphenylacetoneitrile, A., 963.
- derivatives of, A., 85.
- N*-*p*-Methoxyphenylacetyl- β -3-benzyloxyphenylethylamine, A., 1077.
- p*-Methoxyphenylacetylene, carbinol from, and its derivatives, A., 954.
- N*-*p*-Methoxyphenylacetyl- β -phenylethylamine, A., 1077.
- α -*p*-Methoxyphenyl- β -aminoethyl alcohol hydrochloride, preparation of, A., 218.
- 6-Methoxy-2-phenyl-4-aminoquinoline, and its hydrochloride, A., 965.
- 3-Methoxy-2-phenylbenzopyrylium salts, A., 1070.
- p*-Methoxyphenylbutylmalonic acid, and its ethyl ester, A., 1290.
- 4-Methoxyphenyl-*n*-butyric acid, α -3-bromo-, A., 85.
- 7-Methoxy-4-phenylchroman, A., 1069.
- Methoxy- α -phenylcinnamonitrile, hydroxy-, A., 620.
- 7-Methoxy-4-phenylcoumarin, A., 1069.
- 8-Methoxy-3-phenylcoumarin, A., 620.
- α -*p*-(Methoxy)- γ -phenylcrotonic acids, amide and lactones from, A., 726.
- 4-Methoxy-4'-phenyldibenzylmethylamine, A., 1408.
- p*-Methoxyphenyldihydrohydnoic acid, and its ethyl ester, A., 1290.
- 9-Methoxy-10-phenyl-2:3-dimethylantracene, A., 612.
- β -Methoxyphenylditetrahydroquinolylmethane, A., 632.
- p*-Methoxyphenyldiquinolylmethane, A., 632.
- β - α -Methoxyphenylethylamine, salts of, A., 213.
- β -*p*-Methoxyphenylethylamine hydrochloride, A., 213.
- derivatives of, A., 839.
- β -*p*-Methoxyphenylethylamine, β -3-bromo-, and its salts, A., 1077.
- β -*p*-Methoxyphenylethylcarbamic acid, esters of, A., 617.
- Methoxyphenylethylmethylamines, α -hydroxy-, and their methylurethane salts, and mitic activities, A., 839.
- 4-Methoxyphenylethylene, β -nitro- α -3-bromo-, A., 1077.
- β -[4-Methoxyphenylethylimino]- α -2-nitro-3:4-dimethoxyphenylethylene, β -3-bromo-, A., 1077.
- β -Methoxy- β -phenylethyl ketone, α -hydroxy-, dimethyl acetal of, A., 354.
- 3- β -*p*-Methoxyphenylethyl-4-keto-2-thiontetrahydrothiazole, A., 1170.

- 3-Methoxyphenylethyl-*n*-pentadecylketone, 4-hydroxy-, synthesis of, A., 732.
- β -*p*-Methoxyphenylethyl dithiocarbamic acid, ammonium and β -*p*-methoxyphenylethyl ammonium salts, A., 1170.
- β -*p*-Methoxyphenylethyl dithiocarbaminoglycolic acid, A., 1170.
- β -Methoxy- ζ -phenyl- Δ^6 -heptadienoic acid, A., 89.
- 6-Methoxyphenyl-*p*-methoxybenzyl ketone, 2,4-dihydroxy-, and its oxime, A., 1304.
- 4-Methoxyphenylmethylcarbinol, 3-hydroxy-, and its 3-benzoyl derivative, A., 839.
- 1-Methoxy-3-phenyl-4-methylene-3,4-dihydrophthalazine, 2':6'-dibromo-4'-nitro-, A., 836.
- p*-Methoxyphenyl- α -oximinoethyl ketone, and its cobalt salt, A., 1157.
- α -(*p*-Methoxyphenyl)- γ -phenylcrotonolactones, A., 726.
- p*-Methoxyphenyl propenyl ketone δ -phenylsemicarbazone, A., 486.
- β -*o*-Methoxyphenylpropionamide, A., 213.
- p*-Methoxyphenylpropionhydrazide, and its anisylidene derivative, A., 617.
- β -Methoxy- α -phenylpropionic acid, and its chloride, A., 86.
- α -*p*-Methoxyphenyl-*n*-propyl methyl ketone, and its derivatives, A., 85.
- 6-Methoxy-2-phenylquinoline, diamino-, diacetyl derivative, A., 965.
- 4-halogeno-derivatives, A., 965.
- Methoxyphenylquinolines, hydroxy- synthesis of, A., 630.
- 6-Methoxy-2-phenylquinoline-3-carboxylic acid, 4-hydroxy-, and its ethyl ester, A., 630.
- 6-Methoxy-2-phenylquinoline-4-carboxylic acid, and its salts and derivatives, A., 965.
- 6'-Methoxy-2'-phenyl-4-quinoloyl-4-aminoantipyrine, and its picrate, A., 965.
- 6-Methoxy-2-phenyl-4-quinoloylcarbamide, A., 965.
- β -6-Methoxy-2-phenyl-4-quinolylethylenediamine, A., 965.
- 6-Methoxy-2-phenyl-4-quinoloyl-*p*-phenetidine, A., 965.
- β -6-Methoxy-2-phenyl-4-quinolylamidoethyl alcohol, A., 965.
- 6-Methoxy-2-phenyl-4-quinolylaminoformic acid, ethyl ester, A., 965.
- 6-Methoxy-2-phenyl-4-quinolylcarbimide, A., 965.
- β -6-Methoxy-2-phenyl-4-quinolyl-diethylamide, and its picrate, A., 965.
- 4-Methoxyphenyl styryl ketimine, 2-hydroxy-, complex nickel salt of, A., 486.
- p*-Methoxyphenylundecenoic acid, and its ethyl ester, A., 1290.
- p*-Methoxyphenylvaleric acid, A., 1290.
- 3-Methoxyphthalic acid, A., 956.
- 5-Methoxyisophthalic acid, A., 1287.
- Methoxyphthalic acids, synthesis of, A., 730.
- α -Methoxypropaldehyde, β -hydroxy-, and its derivatives, A., 825.
- β -Methoxypropionic acid, esters of, A., 1160.
- o*-Methoxypropionophenone semicarbazone, A., 1303.
- p*-Methoxypropionophenone, and its semicarbazone, A., 1434.
- 4-Methoxy-6-*n*-propylbenzoic acid, 2-hydroxy-, synthesis of, A., 1055.
- 5-Methoxy-2-*n*-propyl-1:3-diketohydrindene, 7-hydroxy-, A., 487.
- 2-Methoxy-4-propylphenol, and its 3:5-dinitrobenzoyl derivative, A., 837.
- p*-Methoxy- α -*n*-propylstyryl methyl ketone, and its oxime, A., 485.
- 2-Methoxypyridine, 5-iodo-, and its hydrochloride, A., 234.
- 2-Methoxypyridine, 5-amino-, and its dihydrochloride, and 5-nitro-, A., 235.
- 6-Methoxyquinoline, 4-amino-, derivatives of, A., 237.
- 4-bromo- and 4-iodo-, and their picrates, A., 237.
- iodo-, methiodide, A., 751.
- 6-Methoxyquinoline-5-aminoacetyl-*p*-arsanilic acid, and its nitroso-derivative, A., 970.
- β -(6-Methoxyquinoline-4-carboxylamido) ethanol, A., 237.
- 6-Methoxyquinoline-4-carboxylic acid, β -chloroethyl ester, A., 237.
- derivatives of, and its degradation, A., 237.
- 6-Methoxyquinoline-4-sulphonic acid, and its salts, A., 237.
- 6-Methoxyquinolyl-4-carbimide, A., 237.
- 6-Methoxy-4-quinolylhydrazine, and its methyl-*p*-tolylidene derivative, A., 237.
- 6-Methoxyquinolyl-4-urethane, A., 237.
- 4-Methoxy- β -resorcyaldehyde, 5-nitro-, wandering of nitro-group on bromination of, A., 1293.
- r*-5-Methoxysorbosazone, A., 69.
- 4'-Methoxystilbene, 4-nitro-, melting point of, A., 479.
- 2-Methoxystyrene, $\alpha\beta$ -dichloro-5-nitro-, and its dichloride, A., 1054.
- 4'-Methoxystyrylbenzoic acid, 6-hydroxy-2:3'-hydroxy-, A., 960.
- 4-Methoxystyryl ketoximes, 3-hydroxy-, and their derivatives, A., 223.
- 7-Methoxy-2-styryl-3-methylchromone, A., 962.
- 3-Methoxystyryl *n*-pentadecyl ketone, 4-hydroxy-, A., 732.
- 6-Methoxy-4-styrylquinoline, and its sulphate, A., 1433.
- 2-Methoxy-1:2:3:4-tetrahydronaphthalene, A., 214.
- 2-Methoxy-1:2:3:4-tetrahydronaphthyltrimethylammonium iodide, A., 214.
- 7-Methoxy-1:2:3:4-tetrahydroisoquinoline, A., 1171.
- 7-Methoxy-*l*-thebenone, and its derivatives, A., 1314.
- 8-Methoxytheobromine, A., 101.
- 2'-Methoxy-1-dithio-1:2'-dinaphthyl ether, A., 723.
- 2'-Methoxy-1-thiol-1:2'-dinaphthyl ether, A., 723.
- 6-Methoxy-4-thiolquinoline, A., 237.
- Methoxythioxanthenes, 4-bromohydroxy- and 1-hydroxy-, and their derivatives, A., 628.
- 2-Methoxytoluene, sulphur derivatives of, A., 212.
- 2-Methoxytoluene, 5-thiol-, A., 213.
- 4-Methoxytoluene, 6-bromo-3-amino-, and its derivatives, preparation of, A., 615.
- 6-Methoxytoluene, 2-hydroxy-, A., 225.
- 2-Methoxytoluene-5-sulphonic acids, salts of, A., 213.
- 6-Methoxy-*m*-toluic acid, nitration of, A., 483.
- N*-3-Methoxy-*o*-tolyl-2:5-dimethylpyrrole-3-carboxylic acid, A., 1306.
- Methoxytrigalactosidoglycuronic acid, calcium salt, A., 67.
- 5-Methoxy-4:3':5'-trimethyl-3:4'-diethylpyrromethene, A., 633.
- 5-Methoxy-4:3':5'-trimethylpyrromethene-3:4'-dipropionic acid, derivatives of, A., 633.
- γ -Methoxy- $\alpha\alpha$ -triphenylpropane, $\alpha\beta$ -dihydroxy-, A., 354.
- 8-Methoxyvaleric acid, and its *l*-menthyl ester, A., 1160.
- p*-Methoxyvalerophenone, and its semicarbazone, A., 1434.
- ϵ -Methoxy-*p*-xylylpentane- β -dicarboxylic acid, A., 89.
- Methyl, free, existence of, A., 1215.
- electric moment of, A., 23.
- Methyl alcohol, formation of, by oxidation of methane, A., 598.
- synthesis of, B., 880; (P.), B., 621.
- catalytically, B., 385, 530.
- catalysts for, A., 1247; B., 751, 962.
- relation between structure and activity of, A., 919.
- thermodynamics of, from water gas, A., 1370.
- production of, catalytically, (P.), B., 531.
- from carbon monoxide, (P.), B., 12.
- purification of, (P.), B., 710.
- Raman effect at critical point of equilibrium of hexane and, A., 145.
- molecular refraction of, A., 148, 555.
- relation between refraction and specific gravity of, B., 963.
- mobility of perchlorate ions in, A., 43.
- thermal properties of, A., 912.
- heat of combustion of, A., 1011.
- freezing and flow points of, A., 105.
- freezing and boiling points of mixtures of ethyl alcohol and, A., 901.
- partial pressure of vapour of, in inert gases, A., 677.
- equilibrium of, with *n*-butyl alcohol and water, A., 793.
- equilibrium of hydrolytic decomposition of, A., 1240.
- catalytic reaction between water vapour and vapour of, A., 177.
- pyrolysis of, (P.), B., 12.
- oxidation of, with air over iron, molybdenum, and their mixed oxides, A., 693.
- action of, with 2:6-dichloro-4-methylquinol, A., 1153.
- with hydrogen peroxide, A., 819.
- production of acetic acid from carbon monoxide and, (P.), B., 579.
- toxicity of, A., 1087, 1186.
- poisoning by. See under Poisoning.
- detection and determination of, B., 530.
- determination of, by the immersion refractometer, B., 963.
- in alcoholic drinks, B., 608.
- in its mixtures with ethyl alcohol, B., 874.
- Methyl borate, solubility of paint and varnish constituents in, B., 983.
- bromide and iodide, infra-red absorption spectra of, A., 1111.
- ϵ -bromo-*n*-amyl ether, A., 1160.
- butyl sulphite, A., 934.
- perchlorate, trichloro-, A., 462.
- chloride, electrical moment of, A., 285.
- heat of adsorption of, by charcoal, A., 558.

- Methyl chloride, reaction of, with aniline, A., 1407.
 toxicity of, to laboratory animals, A., 1453.
a-chloropropyl ether, A., 61.
 compounds, chloro-, manufacture of, (P.), B., 711.
 ether, high-pressure synthesis of, A., 334.
 electric moment of, A., 285.
 chloro-, condensation of, with ethyl phenylmalonate, A., 1293.
pentachloro-, A., 62.
 ethyl ether, bromo- and iodo-, A., 621.
 ethylene trichloro-orthoacetate, A., 1395.
 ethyl ketoxime, *O*-phenyl- and tolyl-carbamyl derivatives, A., 210.
 β -ethylsulphonylethyl ether and dimethylamino-5-methylbenzyl and -propyl ethers, and their salts, A., 86.
 ethyl sulphite, A., 463.
 halides, dielectric constants, densities, and refractive indices of, A., 148.
 iodide, gaseous, photochemical reactions of, A., 333, 819.
 reaction of, with tin trimethyl hydroxide, A., 1280.
 silicate, crystal structure of, A., 1359.
 sulphate, manufacture of, (P.), B., 149.
 Methylacetoacetic acid, ethyl ester, reaction of, with *p*-anisidine, A., 346.
 γ -Methylacetophenone, ω -chloro-, reaction of, with phenylhydrazine and its derivatives, A., 1073.
 Methylacetophenone-2-carboxylic acids, and their derivatives, A., 80.
 10-Methylacridinium chloride, 3:7-diamino-, A., 1430.
 10-Methylacridone, nitration of, and 3-amino-, 3:7-diamino-, and its hydrochloride, 3-hydroxy- and *mono*- and *di*-nitro-, A., 1430.
 β -Methyladipic acid, formation of 3-methylcyclopentanone from, A., 727.
 7-*O*-Methylæsculin, A., 73.
 Methylallene, synthesis and pyrolysis of, A., 332.
 7-Methyl-9-allyldeoxyuric acid, and its hydrochloride, A., 744.
 Methyl-9-allyl-8-thiouric acids, A., 743.
 Methyl-9-allyl-8-thio-*y*-uric acids, A., 743.
 Methylamine, pure, preparation of, A., 953.
 manufacture of, (P.), B., 666.
 formation of hydrocyanic acid from, A., 831.
 from degradation of glycine in the liver, A., 1326.
 in urine, A., 1185.
 hydrogen sulphide, A., 1041.
 Methylamines, dielectric properties of, A., 894.
 β -Methylamino- γ -allyloxy- α -phenylpropyl alcohol. See γ -Allyloxyephedrine.
 1-Methylaminobenzthiazole, 5-chloro-3-bromo-, 5-fluoro-1-amino-, and 5-iodo-, and their derivatives, A., 969.
 α -Methylaminobenzylmalonic acid, A., 367.
 β -Methylamino- γ -butoxy- α -phenylpropyl alcohol. See γ -Butoxyephedrine.
 2-Methylamino-3:4-dihydronaphthalene, and its salts, A., 214.
 β -Methylamino- γ -ethoxy- α -phenylpropyl alcohol. See γ -Ethoxyephedrine.
 α -Methylamino- β -hydroxy- α -3:4-dimethoxyphenylpropane oxalate, A., 953.
 β -Methylamino- α -hydroxy- α -3:4-dimethoxyphenylpropane, and its oxalate, A., 953.
 Methylaminohydroxyhydrindenes, and their salts, A., 214.
 α -Methylamino- β -hydroxy- α -3-methoxy-4:5-methylenedioxyphenylpropanes, and their salts, A., 953.
 β -Methylamino- α -hydroxy- α -3-methoxy-4:5-methylenedioxyphenylpropane, and its hydrochloride, A., 953.
 Methylamino-*p*-hydroxyphenylcarbinol, pharmacological effect of substitution of methyl in β -carbon group of, A., 517.
 α -Methylamino- β -hydroxy- α -phenylpropane, A., 1050.
 β -Methylamino- α -hydroxy-*n*-propylbenzenes, optically active, production of, (P.), B., 13.
 2-Methylamino-1-hydroxy-1:2:3:4-tetrahydronaphthalene, and its salts, A., 214.
 2-Methylamino-5-hydroxy-1:3:4-thiadiazine, and its derivatives, A., 635.
 β -Methylamino- α -methoxy- α -3:4-dimethoxyphenylpropane, and its hydrochloride, A., 953.
 2-Methylamino-1-methoxyhydrindene, and its derivatives, A., 215.
 β -Methylamino- α -methoxy- α -3-methoxy-4:5-methylenedioxyphenylpropane, and its hydrochloride, A., 953.
 β -Methylamino- γ -methoxy- α -phenylpropyl alcohol. See γ -Methoxyephedrine.
 2-Methylamino-1-methoxy-1:2:3:4-tetrahydronaphthalene, and its salts, A., 214.
 5-Methylamino-3-methylhydantoinmethylamide, and its derivatives, A., 852.
 1-Methylamino-2-nitronaphthalene, A., 342.
 3-Methylaminophenylarsinic acid, 4-nitro-, A., 105.
 β -Methylamino- α -phenylpropane- α - γ -diol. See *dl*-Ephedrine, ω -hydroxy-.
 β -Methylamino- β -phenylpropionic acid, A., 367.
 β -Methylamino- α -phenylpropyl alcohol, manufacture of, (P.), B., 58.
 β -Methylamino- γ -propoxy- α -phenylpropyl alcohol. See γ -Propoxyephedrine.
 δ -*N'*-Methylamino- α -*NNN*-trimethyltetramethyleneammonium salts, A., 718.
 κ -Methylaminoundecic acid, and its benzenesulphonyl derivative, A., 76.
 2- β -Methylamylbenzimidazole, A., 601.
 7-Methyl-2-amyl-1:3-diketohydrindenes, 4-hydroxy-, A., 622.
 Methyl *n*-amyl ketone, formation of, from ethyl *n*-butylacetate, A., 197.
 Methyl *n*-amyl ketone, tribromo-, A., 65.
 Methyl-*n*-amylmalonic acid, and its ethyl ester, A., 241.
 Methylanacardic acid, derivatives of, A., 840.
 Methylaniline, 2-chloro-5-nitro- and 5-nitro-2-amino-, A., 851.
di-nitro-, and *di*- and *tri*-nitro-*N*-nitro-, A., 211.
 10-Methylanilino-1:4-dimethylanthrone, A., 341.
 10-Methylanilino-1:5-diphenoxanthrone, A., 225.
 1-Methylantraquinone, 5:8-diamino-, and *di*- and *tri*-hydroxy-, and their *di*- and *tri*-acetates, A., 1296.
 2-Methylantraquinone, 2-trichloro-, A., 624.
 3-Methylantraquinone, 1-chloro-2-hydroxy-3-trichloroamino-, acetyl derivative, and 1:2-dihydroxy-3-amino-, and its acetyl derivative, A., 226.
 6-Methylantraquinone, 1:3-diamino-, A., 1420.
 Methylantraquinones, hydroxyamino-, derivatives of, A., 226.
 1-Methylantraquinone-series, A., 1296.
 2-Methylantraquinone-1-carboxyamylide, A., 357.
 Methylantraquinone-3-carboxylic acid, 2-hydroxy-1-amino-, A., 226.
 Methylantrones, bromo-, A., 1058.
 hydroxy-, synthesis of, A., 225.
 Methylarsepedine, bromination of, A., 750.
 1-Methylarsepedyl 1-peroxide, 1-bromo-, A., 750.
dl-Methylaspartic acid, hydantoin from, by action of phenylcarbamide, A., 943.
 Methylation, biological, A., 112.
 2-Methylazobenzene-4'-arsinic acid, 2:4-dihydroxy-, A., 637.
 5-Methylbarbiturhydrazide, A., 1074.
 9-Methyl-3:4-benzacridine methosulphate, A., 98.
 Methylbenzaldehydes, pyridine synthesis from, A., 1072.
 Methyl-1:2-benzanthraquinone, hydroxy-, A., 1063.
 2-Methyl-6:7-benzanthraquinone, and *mono*- and *di*-hydroxy-, A., 1064.
 Methylbenzanthrone, ω -amino-, manufacture of, (P.), B., 1041.
 α -4-Methylbenzil oximes, and the phenylhydrazone and cobalt salt of the α -oxime, A., 1157.
 2-Methylbenzimidazole, 4:6-di-bromo-5-hydroxy-, hydrobromide of, A., 478.
 5-Methyl-2:3-benzobenzthiophanthrenquinone, 7-chloro-, A., 1163.
 Methylbenzoic acid. See Toluic acid.
 Methylbenzoinoxime, A., 1157.
 3-Methylbenzophenone, 5-bromo-6-hydroxy-, A., 845.
 6-hydroxy-, acetate of, A., 845.
 Methylbenzophenones, *mono*- and *di*-chloro-, A., 623.
 Methylbenzophenone-5-carboxylic acid, 2-hydroxy-, A., 624.
 1-Methylbenzoxazole, and nitro-, and their hydrochlorides, A., 241.
 1-Methylbenzoxazoles, amino-, and their derivatives, and conversion into *o*-aminophenolarsinic acids, A., 241.
di- and *tri*-bromoamino-, acetyl derivatives and *perbromide*, and *tribromonitro-di*- and *tri*-bromo-, A., 478.
 2-Methylbenzthiazole, amino-, and nitro-, and their derivatives, A., 763.
 5-chloro-, A., 348.
 Methylbenzthiophanthrenquinones, and their azomethines, and *di*- and *tri*-bromo- and chloro-, A., 1163.
 1-Methyl-1:2:3-benztriazole, 6-amino-, and 6-nitro-, A., 239.
 Methyl-1:2:3-benztriazole *N*-oxides, constitution of, and 6-amino-, and 6-nitro-, A., 852.

- Methylbenzyl mercaptans, and their disulphides, A., 1408.
thiocyanates and β -naphthyl ethers, A., 1408.
Methylbenzylacetacetic acid, ethyl ester, A., 948.
o-Methylbenzylbenzoic acids, 2'-hydroxy-, A., 225.
1-Methyl-2-benzylthiazolium perchlorate, A., 1076.
Methylbenzylthiourethanes, A., 1408.
p-Methylbenzylidenbenzylamine, A., 834.
2-Methyl-6-benzylidenecyclohexanone, formation of tetrahydropyrone derivatives of, A., 731.
Methylbenzylmethylamines, and their salts, A., 1408.
Methylbenzylmethylcyanamide, A., 1408.
m-Methylbenzyltrimethylammonium bromide, A., 1408.
Methyl-2:4-bis(dichloromethylene-1:3:5-oxadithian-3:3-dioxide, 6-trichloro-, A., 1071.
Methylbixin, molecular weight of, A., 415.
4-Methylisoborneol, and its phenylurethane, A., 626.
Methyl α -bromo-4-dimethylaminostyryl ketone, and its phenylhydrazones, A., 88.
4-Methyl-3- β -bromovinylpyrrole-2:5-dicarboxylic acid, and its esters, A., 241.
l- β -Methylbutane, A., 709.
 β -Methylbutanetricarboxylic acids, and their ethyl esters, A., 67.
 γ -Methylbutane- $\beta\beta$ -tricarboxylic acid, A., 603.
l- β -Methyl-*n*-butan- α -ol, and its brucine phthalate, A., 931.
Methylbutanolidedicarboxylic anhydride, A., 89.
 β -Methyl- Δ^2 -butenal, and its derivatives, A., 335.
 β -Methyl- Δ^2 -butene, density and surface tension of isomerides of, A., 1358.
 γ -Methyl- Δ^2 -buten- α -ol, bromide of, A., 351.
 β -Methyl- Δ^2 -butenylidenecyclohexylamine, A., 343.
 β -Methyl-*n*-butyl alcohol, cyanohydrin from, A., 1404.
 β -Methylbutylanisoles, A., 1056.
 β -Methylbutylcarbamide, iodo-, A., 832.
 β -Methylbutylcarbimide, iodo-, A., 832.
l-Methyl-*n*-butylcarbinol, α -naphthylurethane of, A., 333.
7-Methyl-2-butyl-1:3-diketohydrindenes, 4-hydroxy-, A., 622.
Methyl *n*-butyl ketone, condensation of, with phenolic aldehydes, A., 485.
Methyl isobutyl ketone, *O*-phenyl- and *o*-tolyl-carbamyl derivatives, A., 210.
Methylisobutylmethane series, optical rotations of, A., 1267.
 γ -Methyl- α -isobutyl-*n*-valeric acid, α -hydroxy-, amide of, A., 472.
 β -Methylbutyric acid, α -cyano-, isolation of, A., 1043.
 α -*dic*cyano-, ethyl ester, A., 603.
 β -(α -Methylbutyryloxy)- α -methylbutyric acid, β' -hydroxy-, ethyl ester, A., 197.
Methylcaffeidine, and its salts, A., 1308.
5-Methyl- α -campholenic acid, and its ammonium salt and derivatives, A., 626.
4-Methylcamphor, and its derivatives, and degradation to methylisocamphoronic acid, A., 625.
Methylcamphoranilic acids, nitro-, A., 626.
Methylisocamphoronic acid, formation of, from 4-methylcamphor, and its salts, A., 626.
Methyl Capri blue, oxidation-reduction potential of, A., 1013.
 β -(Methylcarbamido)- β -phenylpropionic acids, A., 367.
2-Methyl-2-carbethoxyethylcyclohexanone-6-carboxylic acid, ethyl ester, A., 1302.
2-Methyl-2-carbethoxyethylcyclohexylidenecarboxylic acid, ethyl ester, A., 1303.
 β -Methylcellobioside heptaacetate, A., 73.
1- β -Methyl-6'-cellobiosidogentiobiose tri-decaacetates, synthesis of, A., 1400.
1- β -Methylcellobiosido-6-glucoses, decaacetates of, A., 716.
Methylchloroacetamide, hydroxy-, A., 217.
2-Methyl-6-(ω -chlorobenzyl)cyclohexanone, A., 731.
Methyl-5-trichloromethylbenzophenone, 2-chloro-, A., 624.
Methyl-2-trichloromethyl-1:3-dioxolane, 2-hydroxy-4-chloro-, A., 820.
Methyl-2-dichloromethylene-1:3:5-oxadithian-3:3-dioxide-4-carboxylic acid, 6-chloro- and 4:6-dichloro-6-trichloro-, ethyl esters, A., 1071.
 α -Methylcinnamyl chlorides, A., 349.
1-Methylcollidinium iodide, molecular salt of, with benzidine, A., 740.
4-Methylcoumarin, 3-chloro-7:8-dihydroxy-, acetyl derivative, A., 1304.
5:7-dihydroxy, methyl ether, A., 962.
7-Methylcoumarin-4-acetic acid, condensation of, with hydroxybenzaldehydes, A., 1069.
Methylcyanoacetic acid, ethyl ester, formation of azo-derivative and hydrazone from, A., 211.
Methylcyanoglyoxime, and its nickel salt and derivatives, A., 605.
trans-Methyldecahydronaphthalenes, A., 1303.
l- ζ -Methyl-*n*-decane, A., 932.
l- ζ -Methyl-*n*-decane- γ -ol, A., 932.
Methyldeuteroporphyrin, dihydroxy-, derivatives of, A., 745.
2'-Methyl-1:2:5:6-dibenzanthracene, A., 612.
Methyl-5:6:5':6'-dibenz- ψ -cyanine iodide, A., 741.
 α -Methyldibenzyl, 4:4'-dibromo-, A., 1281.
2-Methyldibenzyl sulphide, A., 1408.
2-Methyl-3:3-dibenzylindolenine methiodide, A., 1073.
2-Methyl-3:3-dibenzylindoline, and its acetyl derivative, A., 1073.
Methyldibenzylmethylamines, A., 1408.
4'-Methyldidiphenyl-4''-carboxylic acid, and its derivatives, A., 1406.
Methyldiethylamine picrate, A., 1042.
Methyldiethylcarbinol, dichloro-, derivatives of, with organic bases, A., 933.
Methyldiethyl- γ -chloro- γ -diethylamino-*n*-propylammonium dipicrate, A., 1042.
Methyldiethyl- γ -diethylamino- β -hydroxy-*n*-propylammonium picrate, A., 1042.
Methyldiethyl- γ -diethylamino- β -methoxy-*n*-propylammonium chloroplatinate, A., 1042.
Methyldiethyl- γ -diethylamino- Δ -propenyl- α -ammonium dipicrate, A., 1042.
7-Methyl-2:2-diethyl-1:3-diketohydrindene, 4-hydroxy-, A., 622.
NNN-Methyldiethyl-*N'**N'**N'*-methyldiethyl- β -chlorotrimethylenediammonium dipicrate, A., 1042.
NNN-Methyldiethyl-*N'**N'**N'*-methyldiethyl- β -hydroxytrimethylenediammonium dipicrate, A., 1042.
NNN-Methyldiethyl-*N'**N'**N'*-methyldiethyl- β -methoxytrimethylenediammonium salts, A., 1042.
NNN-Methyldiethyl-*N'**N'**N'*-methyldiethyl- α -propylenediammonium dipicrate, A., 1042.
NNN-Methyldiethyl-*N'**N'**N'*-methyldiethyltrimethylenediammonium dipicrate, A., 1042.
N^{*N*}*N*^{*N*}*N*^{*N*}-Methyldiethyl-*N'**N'**N'*-triethyl- Δ -propylene- α - γ -diammonium dipicrate, A., 1042.
NNN-Methyldiethyl-*N'**N'**N'*-triethyltrimethylenediammonium dipicrate, and its derivatives, A., 1042.
10-Methyl-5:10-dihydroacridine, 3:7-diamino-, A., 1430.
2-Methyl-1:2-dihydrobenzthiazole, 5-iodo-1-imino-, and its picrate, A., 969.
Methyldihydrocodeine methiodide, A., 86.
Methyldihydroindole, A., 1171.
10-Methyl-5:10-dihydrophenarsazine, dihydroxide A., 373.
10-Methyl-9:10-dihydrophenarsazine dihydroxide and oxide, A., 637.
Methyl-5:10-dihydrophenarsazines, dichloro-, A., 502.
7-Methyl-1:3-diketohydrindenes, 4-hydroxy-, A., 622.
6-Methyl-2:3-diketophenmorpholines, A., 747.
Methyldimethylaniline, 2-fluoro-4-hydroxy-, and its salts, A., 1408.
Methyl-*o*-2':5'-dimethylbenzoylbenzoic acid, A., 1296.
Methyl-1:3-dioxolane, 2-hydroxy-2-*di*- and -*tri*-chloro-, A., 820.
2-Methyldiphenylamine, 4-amino-, and its derivatives, and 4-nitro-, A., 87.
mono- and *di*-chloro-, A., 501.
N-Methyldiphenylamine, *o*-amino-, 4-chloro-2-nitro-, and 2-nitro-4-amino-, hydrochloride of, A., 1308.
2-Methyldiphenyl-2'-carboxylic acids, 6-nitro-, and their brucine salts, A., 220.
5-Methyldiphenyl-2:6-dicarboxylic acid, 3-hydroxy-, and its salts and derivatives, A., 730.
3-Methyldiphenylsulphone, 4-hydroxy-, A., 212.
2-Methyl-3:4-dipropylpyrrole, and its picrate, A., 747.
5'-Methyl-4:3'-dipropylpyrromethene-3-carboxylic acid hydrobromide, A., 747.
2-Methyl-1:3-dithiolan dioxides, 2-bromo- and 2:2-dichloro-, A., 1395.
Methylene bis- α -*di*bromo-, bis- γ -*di*chloro-, bis- α -chloro- γ -bromo-, and bis- α -chloro- γ -iodo- isopropyl ethers, A., 621.
chloride, manufacture of, (P.), B., 433.
heat of adsorption of, by charcoal, A., 558.
compounds, active, condensation of, with aromatic aldehydes, A., 842.
ethers, manufacture of, (P.), B., 237.

- Methylene groups, reactivity of, in coumarin-4-acetic acids, A., 1069.
 reactive, interaction of sulphuryl chloride with substances containing, A., 1036.
 sulphate, A., 1047.
- Methylenamines, cyclic, reduction of, A., 966.
- Methylenbis-2,5-*di*hydroxybenzylcarbamide, and its derivatives, A., 615.
- ω -Methylenbis-8-hydroxy-5-quinolyl methyl ketone, and its derivatives, A., 741.
- Methylene-blue, adsorption of, by active carbon, A., 678.
 diffusion and cataphoresis of, in gelatin, A., 1368.
 solubility of, in water and ethyl alcohol, A., 557.
 coagulation of, by mercuric chloride, A., 305.
 reduction of, A., 574.
 influence of light, carbon monoxide, and benzoquinone on, A., 442.
 catalysis by, in living cells, A., 108.
- α -Methylene-*n*-butaldehyde, and its derivatives, A., 336.
- l*-Methylenecamphor, amino-derivatives, mutarotation of, A., 1299.
- Methylenecitric acid, hexamethylenetetramine salt, determination of, in mixtures with hexamethylenetetramine, B., 665.
- Methylenecyanoacetic acid, chloro-, ethyl ester, A., 471.
- Methylenedi-*p*-bromophenyl sulphide, A., 1409.
- Methylenedi-*p*-bromophenylsulphone, A., 1409.
- Methylenedimalonic acid, ethyl ester, preparation of, A., 604.
- 3:4-Methylenedioxy-6-benzarsinic acid, A., 751.
- 4:5-Methylenedioxybenzene-1:2:3-tricarboxylic acid, methyl ester, A., 500.
- 3:4-Methylenedioxybenzoyl-*p*-anisylcarbinol, and its semicarbazone, A., 354.
- 3:4-Methylenedioxybenzoyl-*o*-chlorophenylcarbinol, oxime of, A., 845.
- 3:4-Methylenedioxybenzoylphenylcarbinol, and its semicarbazone, A., 354.
 oxime of, A., 845.
- α -3:4-Methylenedioxybenzylbutaldehyde, A., 1056.
- β -3:4-Methylenedioxybenzylbutyl alcohol, A., 1056.
- ω -3:4-Methylenedioxybenzylideneacetanilide, ω -cyano-, A., 237.
- ω -3:4-Methylenedioxybenzylideneaceto-*p*-toluidide, ω -cyano-6-nitro-, A., 237.
- 3':4'-Methylenedioxybenzylidenechromanone, and 7-hydroxy-, and its acetyl derivative, A., 361.
- 3:4-Methylenedioxybenzylidenemalonanilic acid, A., 1155.
- 3:4-Methylenedioxybenzylidenemalon-*o*-toluidic acid, A., 1155.
- 3:4-Methylenedioxybenzylidenethiohydantoin, and its acetyl derivative, A., 1170.
- 3:4-Methylenedioxybenzylmalonanilic acid, A., 1155.
- 3:4-Methylenedioxybenzylmalon-*o*-toluidic acid, A., 1155.
- β -3:4-Methylenedioxybenzylpropyl alcohol, A., 1056.
- 3:4-Methylenedioxyisobutylbenzene, A., 1056.
- 6:7-Methylenedioxy-1-chloromethyl-3:4-dihydroisoquinoline picrate, A., 365.
- 3:4-Methylenedioxy-cinnamanilide, A., 1155.
- 3:4-Methylenedioxy-cinnam-*o*-toluidide, A., 1155.
- 3:4-Methylenedioxy-cinnamyl alcohol, and its derivatives, A., 724.
- 6:7-Methylenedioxy-4-methoxyphenanthrene, synthesis of, and its picrate, A., 730.
- Methylenedioxy-4-methoxyphenanthrene-9-carboxylic acids, and 8-bromo-, A., 730.
- 3:4-Methylenedioxy-1- β -methylbutylbenzene, A., 1056.
- 3':4'-Methylenedioxy- β -naphthylflavanone, A., 1423.
- 3':3'-Methylenedioxy- β -naphthylflavone, A., 1423.
- 4:5-Methylenedioxyphenylacetic acid, 2-bromo-, A., 730.
- 9-(3':4'-Methylenedioxyphenyl)-3:4:5:6-dibenzacridine, A., 98.
- 3- β -3':4'-Methylenedioxyphenylethyl-4-keto-2-thiontetrahydrothiazole, A., 1170.
- β -3:4-Methylenedioxyphenylethyl*l*thiocarbamic acid, ammonium and β -3:4-methylenedioxyphenylethylammonium salts, A., 1170.
- β -3:4-Methylenedioxyphenylethyl*l*thiocarbamineglycollic acid, A., 1170.
- α -(3:4-Methylenedioxyphenyl)-3-methoxycinnamic acid, 2-amino- and 2-nitro-, A., 730.
- α -(3:4-Methylenedioxyphenyl)- γ -phenylcrotonolactones, A., 726.
- γ -3:4-Methylenedioxyphenylpropyl alcohol, and its acetate, A., 1056.
- Methyleneglycerol, hydroxy-, A., 933.
- Methylene ketones, amino-, substituted, formation of unsaturated ketones from, A., 1398.
- 3:6-*endo*Methylene-2-methylhexahydrobenzaldehyde enol-acetate, A., 849.
- γ -Methylenepentane, A., 1031.
- 2-Methylenetetrahydronaphthalene oxide, A., 1052.
- Methylephedrine, and its salts, A., 86.
- 4-Methyl-1-ethinylcyclohexanol, and its derivatives, and rearrangement into 4-methylcyclohexenyl methyl ketone, A., 1057.
- β -Methyl- β' -ethyladipic acid, and its dinitrile, A., 1417.
- Methylethylaniline, combination of, with ethyl iodoacetate, A., 81.
- Methylethylbenz- ψ -cyanines, iodides of, A., 742.
- 2-Methyl-3-ethyl-1:4-benzopyrone, 7-hydroxy-, and 5:7-*di*hydroxy-, and its diacetate, A., 963.
- 2-Methyl-6-ethyl-1:4-benzoquinone, and its quinol, A., 1062.
- 5-Methyl-1-ethylbenzthiazolin, 2-imino-, and its hydrobromide, and 2-nitrosoimino-, A., 1076.
- 1-Methyl-2-ethylbenzthiazolium perchlorate, A., 1076.
- 5-Methyl-1-ethylbenzthiazolone, A., 1076.
- 2-Methyl-1'-ethyl-5'6'-benzthio- ψ -cyanine iodide, A., 742.
- α -Methyl- α -ethylbutyric acid, *p*-toluidide of, A., 1392.
- 4-Methyl-3-ethylcoumarins, *mono*- and *di*-hydroxy-, and their derivatives, A., 993.
- 9-Methyl-3-ethyldecahydronaphthalenes, A., 1303.
- β -Methylethylglutaric acids, γ -cyano-, and their ethyl esters, A., 603.
- 8-Methyl- γ -ethylhepten- β -ones, and their semicarbazones, A., 1274.
- 8-Methyl- ϵ -ethylhepten- γ -ones, and their semicarbazones, A., 1274.
- β -Methyl- α -ethyl-4 α -hexenoic acid, and its silver salt, A., 934.
- Methyl ethyl ketone, measurements of conductivity in, A., 434.
 derivatives and condensation products of, A., 714.
m-nitrobenzenesulphonhydrazone, A., 610.
 4-*p*-tolylthiosemicarbazone, A., 486.
- 3-Methylethylcyclopentanones, and their derivatives, A., 1417.
- 3-Methyl-2-ethylcyclopentanone-2:3-dicarboxylic acid, derivatives of, A., 957.
- α -Methyl- β -ethyl-4 α -pentenoic acid, silver salt, A., 934.
- γ -Methyl- γ -ethyl-4 α -pentinene, and its silver salt, A., 1392.
- 3-Methyl-5-ethylphenol, and its derivatives, A., 1287.
- 1-Methyl-2-ethylcyclopropane, A., 945.
- 1-Methyl-4-ethyl-1-*n*-propylcyclohexane-3:5-dione, A., 1274.
- 2-Methyl-5-ethylpyrrole, and its derivatives, A., 739.
- 3-Methyl-4-ethylpyrrole-2-carboxyanilide, and its ethyl ester, A., 1168.
- 3-Methyl-4-ethylpyrrole-2:5-dicarboxylic acid, A., 1168.
- 3-Methyl-2-ethylquinoline, 4-chloro- and 4-hydroxy-, A., 236.
- α -Methylethylsuccinic acids, esters of, A., 1417.
- Methyl ethyl telluroketone, A., 605.
- 3-Methyl-2-ethyl-1:2:3:4-tetrahydroquinoline hydrochloride, A., 236.
- α -Methyl- β -ethylvaleric acid, β -hydroxy-, ethyl ester, A., 934.
- Methylisoeugenol methoxybromide, A., 953.
- 3-Methylflavone, *mono*- and *di*-hydroxy-, and their acetates, A., 963.
- 2-Methylisoflavone, 7:4'-*di*hydroxy-, A., 738.
- Methylflavylium chlorides, *tri*hydroxy-, A., 1423.
- Methylformazyl, *p*-nitro-, A., 722.
- Methylfructuronic acid, A., 826.
- 2-Methylfuran, 5-nitro-, A., 95.
- Methylfurans, *mono*- and *di*-nitro-, A., 1422.
- 3-Methylfuran-2-carboxylic acid, 5-nitro-derivative, A., 1422.
- Methylfurazan, amino-, benzoyl derivative, and its copper salt, A., 715.
- Methylfurfuraldehyde, hydroxy-, velocity of opening of furan ring in, A., 316.
- 5-Methylfuroic acid, methyl ester, and its 4-nitro-derivative, A., 95.
- β -Methylgalactoside, ring structure of, and its derivatives, A., 1039.
- 1- β -Methylgentiobioside *hept*benzoate, A., 1040.
- Methylglucoside, ring structure of, A., 71.
- Methylglucose, of Pascu, A., 825, 1399.
- 2-Methylglucose, A., 71.
- 3-Methyl-*d*-glucose γ -glucoside, A., 1149.
- α -Methyl-*d*-glucoside, velocity of reaction of, with triphenylmethyl chloride, in pyridine, A., 1149.
- 1- β -Methyl-6- α -glucosidogluco-*hept*benzoate, A., 1040.
- Methylglycol lignin, A., 718.
- Methylglyoxal, formation of, from sugars, A., 605.
 effect of amines on, from trioses, A., 713.
 production of, by enzymes of germinated seeds, A., 391.
 by yeast, A., 391.

- Methylglyoxal, enzymic production and transformation of, A., 1193.
 production and decomposition of, in muscle, A., 873.
 heat of combustion of, A., 1011.
 preparation of solutions of, A., 68.
 relationship of, to alkaline degradation of dextrose, A., 70.
 action of, on acetoacetic acid, A., 69.
 action of weak alkalis on, A., 713.
 intoxication by, in avitaminosis-B₁, A., 773.
 accumulation of, in inhibition of glycolysis, A., 647.
 disappearance of, and inhibition of glycolysis, A., 1455.
 from fission of sugars, detection of, A., 261.
 detection and determination of, A., 824, 825.
 determination of, A., 692.
- Methylglyoxaline, constitution and pharmacology of derivatives of, A., 259.
- Methyl 2-glyoxalanyl ketone, and its picrate, A., 1168.
- Methylglyoxalylacetic acid, enzymic dismutation of, A., 1089.
 derivatives of, and its dismutation by *Bacillus coli*, A., 656.
- Methyl-*d*-gulosides, A., 201.
- d*-γ-Methyl-*n*-heptane, A., 932.
- γ-Methyl-*n*-heptanes, α-amino- and α-bromo-, A., 711.
- δ-Methyl-*n*-heptanol, and its iodide, A., 1309.
- γ-Methylheptan-ε-ol, A., 714.
- d*-γ-Methyl-*n*-heptan-ε-ol, and its bromide, A., 932.
- α-Methylheptic acid, A., 241.
- β-Methyl-*n*-heptic acids, and their derivatives, A., 711.
- β-Methylheptylbenzene, A., 1056.
- 7-Methyl-2-*n*-heptyl-1:3-diketohydrindene, 4-hydroxy-, A., 622.
- 1-Methyl-5:6:7:8:9:10-hexahydroisquinoline, 3-hydroxy-, A., 1427.
- γ-Methylhexaldehyde, ε-hydroxy-, and its derivatives, A., 336.
 and its 2:4-dinitrophenylhydrazones, A., 824.
- γ-Methyl-*n*-hexane, and α-bromo- and α-chloro-, A., 711.
- d*-γ-Methyl-*n*-hexane, A., 932.
- ε-Methylhexane, αβγ-tribromo-, A., 1147.
- trans*-3-Methylcyclohexanespirocyclobutane-2':4'-dicarboxylic acid, A., 1415.
- cis*-4-Methylcyclohexanespirocyclobutane-2':4'-dicarboxylic anhydride, A., 1415.
- Methylcyclohexanespirocyclobutane-2':2':4':4'-tetracarboxylic acids, A., 1415.
- 4-Methylcyclohexane-1-α-cyanoacetic acid, 1-cyano-, ethyl ester, A., 1055.
- Methylcyclohexanespiro-2':4'-dicyanocyclobutane-2':4'-dicarboxyl-imides, A., 1415.
- Methylcyclohexane-spiro-2':4'-dicyano-2'-carbamylcyclobutane-4'-carboxylic acid, A., 1415.
- γ-Methyl-*n*-hexane-αδδ-tricarboxylic acid, and its silversalt, A., 957.
- d*-γ-Methyl-*n*-hexan-ε-ol, A., 932.
- l*-γ-Methyl-*n*-hexanol, and its α-naphthylurethane, A., 711.
- 3-Methylcyclohexanone-5-acetic acid, and its silver salt, ethyl ester, and semicarbazones, A., 1397.
- 3-Methylcyclohexanone-6-carboxylic-5-acetic acid, ethyl ester, and its hydrazone, A., 1397.
- 2-Methylcyclohexanone-2-β-propionic acid, ethyl ester, A., 1303.
- ε-Methylhexenes, *mono*- and *di*-bromo-, A., 1147.
- β-Methylhexenoic acids, A., 934.
- β-Methyl-Δ^γ-hexenoic-β-malonic acid, ethyl ester, A., 1397.
- ε-Methyl-Δ^δ-hexen-α-ol, A., 1147.
- β-4-Methylcyclohexenylbutan-β-ol, and its acetate, A., 1057.
- 4-Methylcyclohexenyl methyl ketone, formation of, from 4-methyl-1-ethinylcyclohexanol, A., 1057.
- α-α-Methyl-Δ^δ-hexenylphenol, A., 838.
- β-Methylhexoic acid, A., 1267.
- β-Methylhexoic acid, β-hydroxy-, silver salt and ethyl ester, A., 934.
- d*-β-Methylhexoic acid, and its ethyl ester, A., 709.
- l*-β-Methylhexoic acid, A., 821.
- β-Methyl-*n*-hexoic acids, and their derivatives, A., 711.
- 1-Methylcyclohexyl bromide, A., 494.
- 7-Methyl-2-*n*-hexyl-1:3-diketohydrindene, 4-hydroxy-, A., 622.
- α-4-Methylcyclohexylethyl alcohol, acetate of, A., 1057.
- Methyl *n*-hexyl ketone, *tribromo*-, A., 65.
- 3-Methylhydantamide, 5-amino-, A., 852.
- 3-Methylhydantmethyamide, 5-amino-, A., 852.
- N*-Methylhydantoin-3-acetamide, A., 966.
- β-Methylhydrazinopropaldehyde, salts of, and its diethylacetal, and its salts, A., 937.
- Methylhydrobenzoins, optically active, A., 487.
- α-Methyltetrahydroxyadipic acid, dilactones of, and their derivatives, A., 937.
- 2-Methyl-4:6-dihydroxyazobenzene-4'-arsinic acid, and its disodium salt, A., 636.
- Methyl-5:8-dihydroxy-1:2-benzanthraquinone, A., 1063.
- Methyl-α-2':5'-dihydroxybenzoylbenzoic acid, A., 1296.
- β-Methyl-αβ-dihydroxybutyric acid, and its *p*-phenylphenacyl ester, A., 1279.
- 1-Methyl-2-β-hydroxyethylpiperidine salts, A., 86.
- N*-Methylhydroxylamine, oxidation of, by iodine, A., 1042.
- 7-Methyl-4-(4'-hydroxy-3'-methoxystyryl)coumarin, derivatives of, A., 1069.
- Methyl-4-hydroxymethyl-1:3-dioxolane, 2-hydroxy-2'-trichloro-, A., 820.
- γ-Methyl-γ-hydroxymethylpentan-α-ol, and its dibromide, A., 1417.
- N*-Methyl-*N*-γ-hydroxypropylaniline methiodide, A., 86.
- 7-Methyl-4-(hydroxystyryl)coumarins, and their derivatives, A., 1070.
- Methylin, A., 718.
- 3-Methylindene, 1:3-dihydroxy-, A., 355.
- Methylindoles, derivatives of, from reaction with maleic anhydride, and their derivatives, A., 1428.
- 2-Methylindole-3-carboxylic acid, and its amide, A., 630.
- 2-Methylindole-3-glycollic acid, and its salts, A., 630.
- 1-Methylindole-4:5:6-tricarboxylic acid, trimethyl ester, A., 1428.
- 1-Methylindolin-*N*-thiocarbonamide, A., 1076.
- 3-(2-Methyl)indolylcarbinol, A., 630.
- α-2-Methylindolyl-3-succinic acid, and its derivatives, A., 1428.
- Methylisoketocamphoric acid, and its salts and derivatives, A., 626.
- 5-Methyl-2-keto-7-(chloroacetylmercapto)benzthioxin, A., 1289.
- Methylketones, *trichloro*-, reaction of, with alcohols, A., 486.
- 6-Methyl-2-ketophenmorpholine, A., 747.
- N*-Methyl-lupanine, and its chloroaurate, A., 371.
- dl*-α-*N*-Methyl-lysine, and its salts and derivatives, A., 767.
- Methylmalondibenzylamide, A., 1036.
- Methylmalondiisobutylamide, and chloro-, A., 1036.
- Methylmalondiethylamide, and chloro-, A., 1036.
- Methylmangostin, derivatives of, A., 960.
- Methylmannopyranosides, derivatives of, A., 200.
- Methylmercurithiosalicilic acid, A., 637.
- N*-Methylmesidine, derivatives of, A., 950.
- Methylmetadioxan, 2-hydroxy-2-trichloro-, A., 820.
- 1-Methyl-2-β-methoxyethylpiperidine chloroplatinate, A., 86.
- N*-Methyl-*N*-γ-methoxypropylaniline methiodide, A., 86.
- Methyl α-methyl-Δ^α-butenyl ketone, A., 1399.
- Methyl-4-methyl-3-(β-dicyanovinyl)pyrrole-5-carboxylic acid, 2-bromo-, ethyl ester, A., 368.
- 1-Methyl-2-methylene-3:3-dibenzylindoline, A., 1073.
- 8-Methyl-α'β'-naphthacarbazole, A., 366.
- 1-Methylnaphthalene, 1-chloro-, manufacture of, (P.), B., 149.
- 4-nitro-, bromination of, and *mono*- and *tetra*-bromo-4-nitro-, A., 474.
- 2-Methylnaphthalene, 8-chloro-5:7-dinitro-, A., 1282.
- 2-Methylnaphthalene-8-acetic acid, 5:7-dinitro-, A., 1282.
- 2-Methylnaphthalene-8-malonic acid, 5:7-dinitro-, diethyl ester, A., 1282.
- 1-Methylnaphthalenesulphonic acids, and their barium salt and derivatives, A., 949.
- 1-Methyl-β-naphtha-2-quinoline, A., 741.
- N*-Methylnaphthindole-4:9-quinone, 2-hydroxy-, synthesis of, A., 363.
- 1-Methylnaphthisatin-4:9-quinone, synthesis of, A., 363.
- 2-Methylnaphthocoumarone, A., 1070.
- Methyl-2-naphthoic acids, 3-hydroxy-4-amino-, benzoyl derivative, and hydroxy-4-chloroamino-, acetyl derivatives, A., 615.
- 7-Methyl-α-naphthol, 2:4-dinitro-, A., 1282.
- 1-Methyl-β-naphthols, *mono*-, *di*-, and *tri*-bromo-, and their acetates, A., 216.
- Methyl-α-naphthol-orange, A., 344.
- 3-Methylnaphthopyrazine, A., 261.
- 3-(2'-Methyl-1'-naphthoyl)acenaphthene, A., 612.
- 1-(2'-Methyl-1'-naphthoyl)anthracene, A., 612.
- 2-(2'-Methyl-1'-naphthoyl)fluorene, A., 612.
- 5-(2'-Methyl-1'-naphthoyl)hydrindene, A., 612.
- 3-(2'-Methyl-1'-naphthoyl)phenanthrene, A., 612.
- l*-Methyl-α-naphthylglycollic acid, preparation of, from *l*-bornyl α-naphthoformate, A., 619.
- Methylnicotone, molecular extinction coefficient of, A., 498.
- 4-Methyl-*p*-nitrobenzamido-α-naphthol, A., 345.
- O*-Methyltrinitrostrychol. See Indole-2-carboxylic acid, 3:5:7-trinitro-, methyl ester.

- l*- ζ -Methyl-*n*-nonane, A., 932.
 Methylnonanes, α -bromo-, A., 711.
l- ζ -Methyl-*n*-nonan- γ -ol, A., 932.
 Methyl-*n*-nonanols, A., 711.
 ζ -Methylnonen-8-ones, A., 1274.
 d - β -Methyl-*n*-nonoic acid, and its ethyl ester, A., 711.
 6-Methylnorcamphor, A., 849.
 7-Methyloctahydro-1:4-ketopyrindine-3-carboxylic acid, 7-nitro-, A., 631.
 Methyl-*n*-octane, and α -amino- and α -bromo-, A., 711.
 Methyl-*n*-octanes, A., 932.
 Methyl-*n*-octanols, and their bromide, A., 932.
l-Methyl-*n*-octanols, A., 711.
 2-Methylcyclooctanone, and its derivatives, A., 731.
 β -Methyl-*n*-octoic acids, and their derivatives, A., 711.
 Methylolamides, condensation of, with phenolic ethers, A., 217.
 Methylolase series, A., 937.
 α -Methyloxysparteine, bromo-, hydrobromide of, A., 499.
 γ -Methyl- $\alpha\gamma$ -pentadiene, B., 833.
 δ -Methylpentane, $\alpha\beta\gamma$ -tribromo-, A., 1147.
 γ -Methyl-*n*-pentane, α -amino-, α -bromo-, and α -chloro-, A., 711.
 3-Methylcyclopentane, configuration of, A., 1052.
 3-Methylcyclopentane-1:1-dicyanoacetic acids, and α -cyano-, imides of, A., 843.
 3-Methylcyclopentane-1:1-diacetic acid, and its silver salt and derivatives, A., 727, 843.
 β -Methylpentane- $\alpha\alpha$ -dicarboxylic acid, A., 242.
 3-Methylcyclopentane-1:1-dimalonic acid, derivatives of, A., 843.
 β -Methylpentane- $\alpha\gamma$ -tricarboxylic acid, A., 603.
 γ -Methylpentane- $\beta\beta$ -tricarboxylic acid, and its ethyl ester, A., 67.
 d - γ -Methyl-*n*-pentanol, A., 711.
 Methylcyclopentanol, 1-trichloro-, A., 1049.
 3-Methylcyclopentane, formation of, from β -methyladipic acid, and its dicyano-imide, A., 727.
 derivatives of, A., 843.
 3-Methylcyclopentanone-2:3-dicarboxylic acid, ethyl ester, A., 957.
 β -Methyl- $\Delta\alpha$ -pentene, A., 1031.
 δ -Methylpentenes, *mono*- and *di*-bromo-, A., 1147.
 β -Methyl- $\Delta\beta$ -pentene- $\Delta\gamma$ -iene, A., 618.
 γ -Methyl- $\Delta\alpha$ -pentoamides, A., 206.
 δ -Methylpentenols, A., 1147.
 γ -Methyl- $\Delta\beta$ -penten- δ -one, and its derivatives, A., 714, 723.
 β -Methyl- $\Delta\alpha$ -pentenonitriles, isomeric, A., 1403.
 γ -Methyl- $\Delta\alpha$ -pentenonitriles, A., 205, 206.
 3-Methyl- $\Delta^{1:2}$ (or δ)cyclopentenylacetone nitrile, and its piperonylidene derivative, A., 843.
 β -Methyl- $\Delta\beta$ -pentenylidenecyclohexylamine, A., 342.
 α - α -Methyl- $\Delta\beta$ -pentenylphenol, A., 838.
 α -3-Methyl- $\Delta^{1:2}$ (or δ)cyclopentenylpropionic acid, α -cyano-, ethyl ester, A., 843.
 β -Methyl- $\Delta\gamma$ -pentinin- β -ol. See Trimethylpropargyl alcohol.
 Methyl- $\Delta\alpha$ -pentinin- γ -ols, silver salts, A., 1393.
 3-Methylcyclopentylacetic acid, and its ethyl ester, and 1-cyano-, nitrile of, A., 843.
 3-Methylcyclopentylcyanacetic acid, and 1-cyano-, ethyl esters, A., 843.
 3-Methylcyclopentylidenecyanoacetic acid, and its derivatives, A., 843.
 ethyl ester, and its reduction with aluminium amalgam, A., 1052.
 α -3-Methylcyclopentylidene-1-propionitrile, A., 843.
 3-Methylcyclopentylmalonic acid, and its derivatives, A., 843.
 p -Methylphenacyl sulphide, derivatives of, A., 1419.
 4-Methylphenanthraquinone, quinoxaline derivative, A., 1282.
 4-Methylphenanthrene, synthesis of, A., 1282.
 9-Methylphenanthridine, 9- ω -chloro-, A., 1308.
 Methyl β -phenylethyl ketone, reactivity of, A., 964.
 Methyl γ -phenylpropyl ketone, reactivity of, A., 964.
 Methylpimanthrene, and its picrate and derivatives, A., 360.
 β -Methylpimelic- β' -acetic acid, and its ethyl ester, A., 1397.
 2-Methylpiperazine, and its salts and dibenzoyl derivative, A., 1430.
 γ -2-Methylpiperidinopropyl benzoate hydrochloride, toxicity of, A., 260.
N-Methyl-2-piperidone, salts of, A., 1306.
 Methylporphyrins, hydroxy-, synthesis of, A., 102.
 β -Methylpropene- $\alpha\gamma\gamma$ -tricarboxylic acid, A., 67.
 γ -Methylpropargyl ether and chloride, A., 618.
 Methylpropene- $\alpha\gamma$ -dicarboxylic acids, α -cyano-, ethyl esters, A., 603.
 1-Methyl-7-isopropenylnaphthalene, and its salts, A., 735.
 4-Methylpropiophenone, 2-hydroxy-, *p*-nitrophenylhydrazone, A., 1295.
 6'-Methyl-3'-isopropylanilothiohydantoin, 5-4'-hydroxy-, A., 495.
 Methylisopropylbenzoic acids, 4-hydroxy-, methyl esters, A., 486.
 3-Methyl-4-propyl-2-bromomethylpyrrole-5-carboxylic acid, ethyl ester, A., 746.
 2-Methyl-10-propyl-5:10-dihydrophenarsazine, A., 1435.
 2-Methyl-5-isopropylidihydroresorcinol, A., 723.
 7-Methyl-2-propyl-1:3-diketohydrindenes, 4-hydroxy-, A., 622.
 2-Methyl-5-isopropyl-1-ethinylcyclohexanol, and its acetyl derivative, A., 1068.
 2-Methyl-5-isopropylcyclohexyl-1-acetaldehyde, and its derivatives, A., 1068.
N-(ϵ -Methyl- β -isopropyl-*n*-hexyl)ethylamine, and its picrolonate, A., 343.
 2-Methyl-5-isopropylcyclohexylidene-1-acetaldehyde, and its derivatives, A., 1068.
 δ -2-Methyl-5-isopropylcyclohexylidenebutane, γ -hydroxy-, A., 1068.
 ϵ -Methyl- β -isopropyl- $\Delta\beta$ -*n*-hexylidenecyclohexylamine, A., 343.
 Methylisopropylidenequinide, cyclic urethane from, A., 727.
 Methyl propyl ketone, condensation of, with phenolic aldehydes, A., 485.
O-phenylcarbamyl derivative, A., 210.
 4-Methyl-3-propyl-1:2- α -naphthapyrones, A., 1304.
 1-Methyl-2-propylcyclopropane, A., 945.
 3-Methyl-5-isopropylpyrazoline, derivative of, with hydantoin-3-acetic acid, A., 966.
 2-Methyl-4-propylpyrrole, A., 747.
 2-Methyl-4-propylpyrrole-5-carboxylic acid, derivatives of, A., 746.
 2-Methyl-4-propylpyrrole-3:5-dicarboxylic acid, and its ethyl ester, A., 746.
 δ -Methyl- ζ -propyl-*n*-undecane, A., 242.
 Methylprotophaeophorbide, A., 247, 634.
 Methylpukateine, and its derivatives, A., 749.
 2-Methylpyridine, action of ammonia on, in presence of dehydrogenating catalysts, A., 1428.
 2-Methylpyridine, amino-, and its salts, A., 1428.
 5-cyano-, and its hydrochloride, A., 1072.
 2-Methylpyridine-6-carboxylic acid, and its salts, A., 370.
 Methylpyridinecarboxylic acids, and their salts, A., 630.
 1-Methylpyridinium iodide, molecular salts of, with 4:4'-diaminodiphenyl- methane, -stilbene and -tolane, and *p*-phenylene diamine, A., 740.
N-Methylpyridinium methanesulphonate and methosulphite, A., 463.
 1-Methyl-2-pyridone, 5-amino-, and its dihydrochloride, 3-bromo-5-nitro-, and 5-nitro-, A., 234.
mono- and *di*-bromo- and *mono*- and *di*-chloro-, A., 740.
 5-iodo-, A., 234.
 1-Methyl-2-pyridone-3-arsinic acid, A., 1072.
N-Methyl-2-pyridone-5-arsinic acid, 3-amino-, acetyl derivative, and 3-nitro-, A., 1316.
N-Methyl-4-pyridone-5-arsinic acids, A., 1315.
 5-2-Methylpyridylethylene- $\alpha\beta$ -dicarboxylic acid, A., 850.
 5-Methylpyromucic acid, 4-nitro-, A., 96.
N-Methylpyrrole, derivative of, by action of methyl acetylenedicarboxylate, and its derivatives, A., 1428.
 1-Methylpyrrole-2-acetic acid, and its ethyl ester, A., 1306.
 2-Methylpyrrole-5-aldehyde, and its oxime, A., 739.
 4-Methylpyrrole-3-aldehyde-2:5-dicarboxylic acid, and its derivatives, A., 368.
 1-Methylpyrrole-2:5-diacetic acid, and its methyl ester, A., 1306.
N-Methylpyrrole-2:5-dipropionic acid, A., 849.
 5-Methylpyrrole-5-succinic acid, and its dimethyl ester, A., 849.
 Methylpyrroprophyrin, hydroxy-, and its bromo-derivative, A., 745.
 α -*N*-Methylpyrrol-2-maleic acid, and its sodium salt and anhydride, A., 1428.
 α -*N*-Methylpyrrol-2-succinic acid, methyl ester, A., 1428.
 4-Methylquinol, 2:6-dichloro-, reaction of, with methyl and ethyl alcohols, A., 1153.
 2-Methylquinoline, ammono-enolic modification, salts of, A., 1166.
 2-Methylquinoline, 3:4-dichloro-, 3-chloro-4-hydroxy-, 4-hydroxy-2-chloro- and 4-hydroxy-2-hydroxy-, and 3:4-dichloro-2-chloro- and 2-hydroxy-, A., 236.
 4:6-dihydroxy-, A., 1430.
 2-Methylquinolines, 4-hydroxy-, formation of, from β -arylamino-crotonic esters, A., 851.

- 5-Methylquinoline, 7-amino-8-hydroxy-, and its derivatives, A., 365.
- 6-Methylquinoline, 8-amino-2-hydroxy-, and its derivatives, 2-chloro-8-nitro-, and 8-nitro-, methiodide of, A., 1171.
- 1-Methylisoquinoline salts, A., 1427.
- 2-Methylquinoline-6-aminoacetyl-*p*-arsanilic acid, and its nitroso-derivative, A., 970.
- 1-Methylquinolinium iodide, molecular salts of, with 4:4'-diaminodiphenylmethane, -stilbene and -tolano and phenylenediamines, A., 740.
- 2-Methylquinolinium hydrogen molybdenum trioxysulfate, A., 1036.
- 2-Methyl-4-quinolone-3-propionic acid, β -6-nitro-, A., 1166.
- 6-(2'-Methylquinolyl)quinoline, 6-amino-, methiodide, A., 751.
- Methylriboside, ring structure of, A., 1399.
- Methylselenol, and its metallic derivatives, A., 600.
- 2-Methylcycloselenopentane, and its salts, A., 373.
- Methylsinomenine methyl methosulphate, A., 970.
- roseomethine methyl methosulphate, A., 970.
- violeomethine methyl methosulphate, A., 970.
- Methylsinomenine, 5-hydroxy-, and its derivatives, A., 105.
- β -Methylsorbic acid, ethyl ester, A., 1392.
- Methyl- ψ -strychnine, A., 1312.
- α -Methylstyrene, dimers of, A., 945.
- 4-Methylsulphonyldiphenylamine-2'-carboxylic acid, A., 1414.
- p*-Methylsulphonylphenylhydrazine, and its benzylidene derivative, A., 1409.
- 4-Methylsulphoxidodiphenylamine-2'-carboxylic acid, A., 1414.
- Methyltartaric acid, salts of, A., 607.
- 2-Methyltetrahydroxyglucose diethyl mercaptal, A., 71.
- Methyl-1:2:3:4-tetrahydroanthraquinones, 5:8-dihydroxy-, and their derivatives, A., 1298.
- 2-Methyl-5:6:7:8-tetrahydro-1:2'-dinaphthyl ketone, A., 612.
- Methyltetrahydrofuran, 1-bromo-, A., 933.
- Methyl-8:9:10:11-tetrahydro- α / β -naphthaeabazoles, A., 366.
- 6-Methyl-1:2:3:4-tetrahydronaphthalene, 6'-chloro-, manufacture of, (P.), B., 1086.
- 2-Methyl-5:6:7:8-tetrahydro- α -naphthol, A., 1282.
- 2-Methyl-5:6:7:8-tetrahydro- α -naphthylamine, and its derivatives, A., 1282.
- 6-Methyl-1:2:3:4-tetrahydroquinimiazole, and its perchlorate, A., 1171.
- 6-Methyl-5:6:7:8-tetrahydroisoquinoline, 1:3-dihydroxy-, A., 1165.
- 2-Methyltetrahydrothiophen, action of *l*-menthylbromoacetate on, A., 628.
- 6-Methyl-1:2:3:4-tetraphenyldihydropyrimidine-5-carboxylic acid, ethyl ester, A., 850.
- 2-Methyl-4:4:5:5-tetraphenyltrimethylene 1:3-disulphide, A., 1419.
- 4-Methylthiodiphenylamine-2'-carboxylic acid, and its barium salt, A., 1414.
- 3-Methylthiolacridone, A., 1414.
- 2-Methylthiolanthraquinone, 1-amino-, A., 748.
- α -Methylthiolbenzoic acid, *l*-menthyl ester, A., 961.
- 4-Methylthioldiphenylamine, A., 1414.
- 3-Methylthiol-4:5-diphenyl-1:2:4-triazole, A., 238.
- Methylthioethylthiolmethane, A., 1394.
- p*-Methylthiolphenylcarbamide, A., 346.
- p*-Methylthiolphenylthiocarbamide, A., 346.
- 3-Methylthiol-5-phenyl-4-tolyl-1:2:4-triazoles, A., 238.
- 3-Methylthiol-5-phenyl-1:2:4-triazole, A., 238.
- Methylthionaphthen-2:3-dicarboxylic acids, chloro-, and their anhydrides, A., 1163.
- Methylthionaphthenquinones, chloro-, and their derivatives, A., 1163.
- 4-Methyl-2:3'-dithionaphthenyl ketone-2'-carboxylic acid, 6-chloro-, A., 1164.
- p*-S-2-Methylthionaphthenylquinone, 4-chloro-, A., 1164.
- Methylthioxanthenes, hydroxy-, and their diacetoborate, A., 628.
- Methyltri-*n*-amylarsonium salts, A., 473.
- 4-Methyl-1:2:3-triazine, 2-amino-6-thiol, salts of, A., 368.
- 2-Methyltribenzylmethylammonium bromide, A., 1408.
- Methyltributylarsonium salts, A., 472.
- Methyltriethylarsonium salts, A., 472.
- β -Methyltrimethylene trithiocarbonate and dithiolcarbonate phenylhydrazones, A., 628.
- dithiolcarbonate carboxyphenylhydrazones, and its resolution and derivatives, A., 628.
- 2-Methyltriphenylamine, 4-nitro-, A., 87.
- Methyltri-*n*-propylarsonium salts, A., 472.
- Methyl-1:3:5-trithian-1:3-dioxide, and its tetrabromo-derivative, A., 1395.
- N*-Methyltryptamine, formation of, from calycanthine, A., 855.
- ϵ -Methyl- Δ^8 -undecene-7-one, A., 714.
- β -Methylvaleric acid, preparation of, A., 821.
- d*- β -Methyl-*n*-valeric acid, A., 931.
- l*- β -Methylvaleric acid, A., 709.
- β -Methyl-*n*-valeric acids, and their derivatives, A., 711.
- allo*- β -Methylvaleric acids, α -bromo-, and their chlorides, A., 1270.
- γ -Methylvaleryl chloride, A., 714.
- β -Methylvalerylglycines, α -bromo-, isomeric, A., 1270.
- Methylvanillin, derivatives of, A., 226, 1056.
- 9-Methylisoxanthine, 8-bromo-, and 8-nitroso-, and its ammonium salt, A., 743.
- 9-Methylisoxanthine-8-thiolacetic acid, A., 743.
- Methyl-yellow, A., 343.
- Methystic acid, synthesis of, A., 89.
- Metrosideros*, essential oils of, B., 565.
- Mezcaline. See β -3:4:5-Trimethoxyphenylethylamine.
- Mica, constitution of, A., 1266.
- Mice, white, sensitivity of, to poisons, A., 121, 122.
- Micelles, charge on, A., 1123.
- Michael reaction, A., 1280, 1397.
- Microchemical analysis. See under Analysis.
- Microchemistry, technique of reactions in, A., 133.
- Micrococcus lysodeikticus*, effect of lysosyme on potential of cultures of, A., 1461.
- Micromeria Douglasii*, constituents of, A., 536.
- Microneutrons, A., 1349.
- Micro-organisms (*microbes*), biochemistry of, A., 524, 1092, 1458, 1459.
- culture of, (P.), B., 314.
- growth of, on chilled and frozen meat, B., 779.
- decomposition of hemicelluloses by, A., 1192.
- reduction of mineral phosphates by, A., 266.
- nitrogen assimilation by, A., 1459.
- decomposition of tannins by, A., 1094.
- relation between chemical constitution and action on, A., 1054.
- action of formaldehyde and silver nitrate on, A., 1336.
- in water, effect of various gases on, A., 525.
- anaerobic, growth of, A., 126.
- larger than bacteria, order of death of, A., 394.
- marine denitrifying, A., 655.
- nitrogen-fixing, effect of silica gel on assimilation of phosphorus by, A., 1192.
- Micropenetrometers for testing fats, B., 258.
- Microphotometer, slit, A., 703.
- Microscope, fluorescence, A., 702, 928.
- petrographical, accessory apparatus for, A., 455.
- Microscopy, production of specimens or negatives for, (P.), B., 1080.
- ultra-violet, A., 1387.
- sources of illumination for, A., 541.
- Micro-sublimation. See under Sublimation.
- Mildew, development of, in wool, B., 581.
- Milk, influence of sunlight on, A., 1443.
- refractive index of, B., 609.
- relationship between sugar and chlorine contents and refractometer figure of, B., 1070.
- influence of bacteria on oxidation-reduction potential of, A., 876.
- determination of freezing point of, B., 512.
- normal variation in freezing point of, B., 860.
- variation in freezing point and conductivity of, B., 315.
- surface tension of, B., 512.
- dispersoid-chemical study of, B., 512.
- colloidal nature and examination of, and action of rennin thereon, B., 739.
- treatment of, (P.), B., 364.
- by irradiation, (P.), B., 1073.
- coolers for, (P.), B., 322, 1026.
- funnel-shaped, (P.), B., 1026.
- apparatus for drying of, (P.), B., 997.
- spray-drying of, B., 512.
- conservation of heat in dryers for, (P.), B., 610.
- evaporators and deodorisers for, (P.), B., 564.
- effect of process plant materials on flavour of, B., 739.
- cause of beetroot-like odour and taste in, B., 87, 651.
- centrifugal separators for, (P.), B., 520, 570.
- rising of fat in, B., 133, 739.

- Milk**, coagulation of, B., 608.
 soft curd of, B., 991.
 pasteurisation of, (P.), B., 823, 1073.
 formation of cream layer on, B., 779.
 creaming of, pasteurised at high temperatures, B., 1071.
 adulteration of, with sugar solution, B., 779.
 secretion of, A., 1322.
 effect of feeding with menhaden oil on, A., 862.
 dietary deficiencies of, A., 980.
 increasing digestibility and pharmacological action of, (P.), B., 462.
 effect of feeding with palm-kernel cake and cocoa waste on fat content of, A., 862.
 influence of fodder containing vitamin-D on, A., 509.
 effect of irradiated yeast diet on yield of, A., 1443.
 bacteria and moulds of curd of, B., 610.
 proteolytic bacteria of, A., 876.
 catalase value of, B., 41.
 colouring matter of, A., 644.
 dehydrogenases of, A., 389.
 dextrose in, B., 512.
 relation between fat and protein in, B., 271.
 bacterial production of lactic acid in, A., 1459.
 effect of reducing substances in, on lactic fermentation, A., 1334.
 peptidases in, A., 862.
 peroxidase of, A., 509.
 biological significance of, A., 772.
 utilisation of proteins of, in carbohydrate feeding, A., 868.
 value of proteins of, for reproduction and lactation, A., 256.
 vitamins of, A., 398.
 effect of nickel from pasteurisation container on, B., 178.
 effect of diet of cows on vitamin-B₁ and -B₂ in, A., 1196.
 and milk products, antirachitic and calcifying properties of, A., 822.
 growth-promoting properties of the water-soluble portion of, A., 1464.
 utilisation of, in relation to inorganic calcium and phosphorus, A., 384.
 preservation of, (P.), B., 364, 1121.
 for examination, B., 1071.
 determination of keeping quality of, B., 991, 1070.
 influence of fat content on keeping quality of, B., 41.
 corrosion of metals by, and its effect on flavour, B., 903.
 rôle of constituents of, in breadmaking, B., 512.
 clarification of, for cheese, B., 178.
 for use in cheese manufacture, B., 1153.
 asses', fat of, B., 87.
 condensed, sweetened, B., 178.
Aspergillus in, B., 220.
 determination of laevulose in, B., 651.
 cows', freezing point of, and its application, B., 695.
 effect of dilution on titratable acidity of, B., 739.
 residual nitrogen of, A., 757.
 phosphatides of, A., 861.
 effect of irradiated ergosterol or yeast on vitamin-D potency of, A., 989.
 substitution of, for human milk in infant feeding, A., 1086.
 raw, effect of temperature on solubility of nickel, tin, copper, chromium steel, and zinc in, B., 495.
 determination of ergosterol and sterols in, A., 508.
 cows', donkeys', goats', and human, iron content of, A., 381.
 cows' and human, precipitation of casein from, A., 862.
 heated, detection of, and testing for pasteurisation, B., 315, 1025.
 human, citric acid in, A., 1443.
 elimination of egg-white in, A., 112.
 sugars of, A., 940.
 effect of diet on vitamin potency of, A., 509.
 antirachitic vitamin in, A., 252.
 analysis of, A., 251.
 liquid and dry, effect of ultra-violet light on antirachitic vitamin in, A., 1464.
 mares', koumiss from, B., 271.
 pasteurised, acidoproteolytic bacteria in, A., 126.
 acid-proteolytes and thermophiles in, B., 695.
 of low bacterial content and containing vitamins, production of, (P.), B., 1073.
 detection of, B., 413.
 and raw, nutritive value of, A., 760 ; B., 563.
 powdered, solubility of, B., 461.
- Milk**, retained, analysis of, B., 364.
 skim, effect of preheating on dispersity of calcium caseinate in, A., 798.
 as substitute for milk, A., 760.
 use of, in manufacture of ice cream and cream cheese, B., 779.
 dry, baking strength of, B., 1119.
 or condensed, effect of heat-treatment on, for ice cream, B., 1119.
 sour, kephir, saya, and yoghurt, vitamin content of, A., 1098.
 sows', fat of, B., 564.
 sterilised, determination of fat in, B., 1025.
 synthetic, nutritive equilibria with, A., 256.
 unstable to heat, detection of, B., 739.
 vixens', composition of, A., 1443.
 methylene-blue reductase test for, B., 271.
 copper serum for refractometric analysis of, B., 1071.
 refractometry of lead serum for analysis of, B., 1070.
 detection of ammonia in, B., 1119.
 detection of amylase in, B., 42.
 detection of added fats in, B., 133.
 detection of formaldehyde in, B., 739.
 detection of nitrate and added water in, B., 564.
 detection of tubercle bacilli in, B., 133, 513.
 detection and determination of peroxidase in, A., 862.
 detection of added water in, B., 739, 1025.
 determination of *B. coli* in, B., 271.
 determination of calcium, magnesium, and phosphorus in, A., 757.
 determination of casein in, B., 512.
 determination of chloride in, B., 1153.
 determination of copper in, B., 316.
 determination of fat in, B., 220.
 determination of nitrogenous matter in, B., 609.
 determination of proteins of, B., 316, 413, 512, 564.
 determination of added sodium bicarbonate in, B., 651.
 determination of reducing sugars in, A., 1320.
 determination of added water in, B., 944.
- Milk powder**, from soya-beans and its use for infant feeding, B., 739.
 artificial, detection of, B., 42.
 spray-dried, physico-chemical constitution of, B., 563.
- Milk products**, manufacture of, (P.), B., 415, 823, 992, 1026.
 alcohol-soluble proteins from, A., 1179.
 solid, manufacture of, (P.), B., 823.
- Milk-and-egg cream**, analysis of, B., 364.
- Mills**, removal of plastic material from, (P.), B., 48.
 for small samples, A., 458.
 ball, (P.), B., 371.
 silencing of, (P.), B., 615.
 or tube, (P.), B., 658, 952.
 centrifugal, (P.), B., 570.
 colloid. See Colloid mills.
 crushing, (P.), B., 518.
 ball, (P.), B., 826.
 centrifugal, hammers for, (P.), B., 702.
 or grinding, (P.), B., 615.
 disintegrating, for ores, etc., (P.), B., 371.
 grinding, B., 321 ; (P.), B., 228*, 279, 322, 371, 423, 518, 786, 952, 1078.
 lubricating and liquid seal systems for, (P.), B., 323.
 swing hammer or beater type, (P.), B., 48, 50*.
 for chocolate, etc., (P.), B., 1126.
 and mixing, (P.), B., 910.
 or pulverising, (P.), B., 702. "
- hammer, (P.), B., 370, 614.
 hammer for, (P.), B., 910.
 high-speed screen, (P.), B., 279.
 multiple, for chocolate, soap, etc., (P.), B., 570.
 pulverising, (P.), B., 2, 614, 786, 1126.
 automatic temperature control in, (P.), B., 786.
 hammers for, (P.), B., 423.
 pneumatic separator for, (P.), B., 1030.
 impact, (P.), B., 48.
 roller, alloy for guide of, (P.), B., 638.
 tube, (P.), B., 94.
- Millerite**, density and structure of, A., 1265.
- Millet**, fermentation of, B., 693.
- Milling** of woollens, etc., theory of, B., 836.
- Milling products**, edible, treatment of, (P.), B., 317.
- Millon's reagent**, preparation and reactions of, A., 808.

- Mimetesite**, A., 817.
 partial substitution of lead halide by chromate in, A., 1021.
- Mimusops**, oil from seeds of species of, B., 401, 816.
- Mines**, material for ventilating tubing for, (P.), B., 585.
 tests of inflammability of dusts in, B., 704.
- Minerals**, concentration of, (P.), B., 188.
 by flotation, (P.), B., 301, 723.
 flotation agents for, B., 252.
 froth-flotation of, (P.), B., 256.
 heat treatment of, (P.), B., 143.
 apparatus for agglomeration and roasting of, (P.), B., 165*.
 bleaching and purification of, (P.), B., 247.
 drying of, (P.), B., 614.
 gravity separation of, A., 817.
 wearing hardness of, A., 459.
 method of observation of magnetic properties of, A., 191.
 adsorption of gases by, A., 34, 1120.
 order of crystallisation of, A., 596.
 investigations of, with Wood's light, A., 584.
 rhythmic deposits of, A., 707.
 Belgian and Congo, absorption spectra of, A., 1145.
 carbonaceous, classification and development of, B., 659.
 from Franklin, A., 818.
 from Långban, A., 1028.
 metalliferous, microscopic analysis of, A., 703.
 non-metallic, Canadian, B., 881.
 pegmatite, of Poland, Maine, A., 818.
 phosphate, from Fairfield, Utah, A., 818.
 Portuguese, A., 1146.
 rock-forming, absorption spectra of, A., 1146.
 Spanish, vanadium in, A., 60.
 vanadiferous, of South Devon, A., 1390.
 specific gravity and hardness tables for use in analysis of, A., 1264.
 microscopic analysis of, A., 587.
 detection of silver in, A., 701.
 determination of alumina and magnesia in, B., 440.
 determination of beryllium in, B., 845.
- "Minjak pelandjau," A., 88.
- Mink**, occurrence of zinc in, A., 861.
- Mirrors**, astronomical, manufacture of, (P.), B., 842.
 optical metallic, manufacture of, (P.), B., 448.
 silvered, preservation of, A., 458.
- Mist**, dispersal of, (P.), B., 141.
- Mitchella repens**, constituents of, B., 697.
- Mitochondria-Golgi complex**, relation of, to secretion, A., 112.
- Mixers**, (P.), B., 140, 182, 519, 1030.
 for inflammable liquids, etc., (P.), B., 867.
 concurrent, B., 909.
 disc, (P.), B., 570.
 drum, inclined, (P.), B., 519.
- Mixing of liquids or liquids and gases**, (P.), B., 280.
 of liquid, pulverulent granular or pulpy masses, (P.), B., 280.
 of semi-liquid mixtures, (P.), B., 49.
- Mixing apparatus**, (P.), B., 94, 142*, 182, 658, 788, 867, 998.
 for preparation of damp mixtures, (P.), B., 615.
 for gases and solid particles, (P.), B., 140.
 for liquids, (P.), B., 703, 788.
 or viscid materials, (P.), B., 788.
 for semi-liquid materials, (P.), B., 658.
 for stiff materials, (P.), B., 787.
- Mixing machines**, (P.), B., 3, 140, 910.
 for dough, etc., (P.), B., 570.
 for sticky materials, (P.), B., 867.
 rotary, (P.), B., 49, 280.
- Mixtures**, results of investigations of, A., 1389.
 Kordes' law for determination of association in, A., 32.
 azeotropic, influence of b.p. on composition of, A., 296.
 binary, viscosities of, A., 296.
- Moisture**. See Water.
- Molasses**, formation of, A., 1005.
 electrical conductivity of, B., 606.
 fermentation of, (P.), B., 40.
 yield of yeast from, B., 1117.
 use of, as a fertiliser, B., 1149.
 effect of fertilisation with, on cane-sugar, B., 604.
 beet, isolation of choline from, B., 85.
 recovery of sucrose from, (P.), B., 649.
 cane, effect of storage on, B., 901.
 exhaustibility and "ash per cent. non-sugar" ratio of, B., 737.
- Molasses**, cane, a degree Brix-total solid relationship for, B., 1115.
 alcohol from, B., 217.
 extraction of sucrose from, (P.), B., 649.
 carbonised, composition of, B., 6.
 refined sugar, fermentation of, B., 412.
 conductometric formula for determination of ash in, B., 692.
- Molecular aggregation**, A., 1357.
 association, A., 547, 786, 1368.
 and internal pressure, A., 1004.
 complexity, A., 1122.
 compounds, A., 1368.
 constitution and Raman effect, A., 785.
 dissymmetry, A., 1356.
 forces, A., 149, 1216.
 polarisation. See under Polarisation.
 volume. See under Volume.
 weights. See under Weights.
- Molecules**, structure of, from optical and electrical data, A., 1215.
 calculation of, from Raman spectra, A., 21.
 and magnetism, A., 547.
 from paramagnetic susceptibility and quantum mechanics, A., 670.
 by electron diffraction, A., 13.
 and electric moment, A., 410, 669.
 and heat of activation, A., 1215.
 rational symbolisation of, A., 548.
 relation between constitution and paramagnetic properties of, A., 25.
 interferometric determination of form of, A., 897.
 magnitude of, and phase distribution, A., 1119, 1221.
 effective cross-sections of, A., 890.
 space distribution in streams of, A., 140.
 intensity of beams from, A., 793.
 superposition of electron charges in, A., 666.
 exchange energy of, A., 1113.
 measurement of velocities of, A., 156, 542.
 with single carbon linkings, free rotation in, A., 1216.
 rotation and vibration of, in collision, A., 404.
 radiation-less collisions between atoms and, A., 783.
 internal energy of, on collision, A., 543.
 decomposition of, through collisions, A., 1215.
 perturbation theory of, A., 17.
 in strong centrifugal fields, A., 1230.
 orientation of, at liquid-gas interface, A., 1213.
 adsorbed, energy transfer at, A., 1226.
 diatomic, structure of, A., 1104.
 polyatomic, chemical binding in, A., 547.
 directed valency in, A., 548.
 dipole, electrical energy of, in solution, A., 901.
 orientation of, in viscous media, A., 1112.
 organic, dipole moments and structure of, A., 24.
 polar, influence of type of chemical combination on properties of, A., 785.
- Molybdates**. See under Molybdenum.
- Molybdenum**, atomic weight and isotopes of, A., 280.
 distribution of, in nature, A., 756.
 recovery of, from its compounds and mixtures with other metals, (P.), B., 765.
 from petroleum hydrocarbons, (P.), B., 303.
 X-ray diffraction of, by paraffin and graphite, A., 3.
 shape of K line in spectrum of, A., 1205.
 wave-length of $K\alpha$ -rays of, A., 1104.
 velocity of secondary electrons from, A., 11.
 as catalyst in nitrogen fixation, A., 1095.
 Peltier effect at junctions of tungsten and, A., 44.
 oxidation of, to the fourth degree, A., 1382.
 quadrivalent, complex thiocyanates of, A., 183.
 thoriated, activation of, A., 994.
 oxy-salts of, with ammonium, A., 923.
- Molybdenum alloys**, for cutting tools, etc., (P.), B., 725.
 with uranium, manufacture of, (P.), B., 121.
- Molybdenum bases** (*molybdenumammynes*), A., 697.
- Molybdenum arsenide and phosphide**, A., 809.
 hexafluoride, physical constants of, A., 553.
 trioxide, crystal structure of, A., 289, 897, 1115.
 sulphates, A., 923.
- Molybdic acid**, compounds of, with hydroxylamine, A., 923.
 Molybdic acids, and molybdates, complex, A., 183.
 Molybdates, aggregation of ions in solutions of, A., 448.
 precipitation of, A., 911.

Molybdenum organic compounds:—

- Molybdenum octacyanides**, reactions of, A., 447.
- Molybdenum detection**, determination, and separation:—
 - detection of, A., 329.
 - determination of, A., 589.
 - in steel, B., 297, 762.
 - separation of, from rhenium, A., 1143.
- Molybdenum blue**, A., 1021.
- action of aldehydes on solutions of, A., 906.
- in analysis, A., 927.
- Monarda punctata**, constituents of, A., 886; B., 945.
- Monel metal**, autogenous and electrical welding of, B., 1142.
- welding of, for chemical apparatus, B., 887.
- thermo-electric properties of, A., 552.
- Monk fish**, pigmentation of liver of, A., 1196.
- Monkeys**, metabolism in yellow fever in, A., 510, 1181.
- Montanic acid**, electrolysis of, B., 229.
- Monticellite**, A., 930.
- Moors**, manuring of, B., 988.
- Moquilia tomentosa**, seed oil from, B., 355.
- Mordanting of textiles**, (P.), B., 197.
- Moringa aptera** seed, from Egypt, B., 31.
- Morphine**, and its derivatives, structure and action of, A., 871.
- manufacture of, from opium, (P.), B., 1122.
- content of, in blood and brain after administration, A., 1453.
- effect of, on blood-sugar, A., 1329.
- effect of injections of, on nitrogen balance of dogs, A., 120.
- poisoning. See under Poisoning.
- hydrochloride, action of blood and blood-serum on, A., 858.
- detection of, by Denigès-Oliver test, A., 1312.
- by means of ferric salts, A., 1319.
- determination of, A., 972; B., 565, 861.
- biologically, A., 1087.
- in aqueous solutions, A., 371.
- in opium, B., 45, 89, 135, 463, 565, 905.
- Morphine alkaloids**, acid rearrangement of, A., 1313.
- Morphine series**, syntheses in, A., 104.
- apoMorphinesulphonic acid**, A., 105.
- Morphinism** in albino rats, A., 1187.
- Morpholine ring**, local anæsthetics containing, A., 1075.
- Morpholquinone**, synthesis of, A., 624.
- Mortar**, (P.), B., 159.
- application of mathematical formulæ to grading of, B., 973.
- durability and strength of bond between brick and, B., 678.
- ground clay as plasticising agent in, B., 249.
- volume changes with water content of, B., 842.
- standardisation of tests for cement, concrete, and, B., 974.
- asbestos, (P.), B., 679.
- cement, acid-proof, B., 842.
- hydraulic, manufacture of, (P.), B., 114.
- light, production of, (P.), B., 761.
- refractory, for use in silica bricks, (P.), B., 806.
- sand, strength of, B., 114.
- Mosquito**, toxicity of rotenone and nicotine to, B., 990.
- Moss**, desiccated, resistance of, to poisons, A., 133.
- Moths**, melanism in, A., 1186.
- protection of materials from, (P.), B., 347.
- clothes, damage of animal fibres by, B., 624.
- codling, effect of various chemicals on, B., 269.
- chemistry of baits for, B., 269, 990.
- killing of eggs of, B., 269.
- Mothproofing of wool**, etc., (P.), B., 244.
- of wool, fur, hair, etc., (P.), B., 716.
- Mothproofing agents**, (P.), B., 13, 238.
- testing of, B., 242.
- for wool, rotenone as, B., 242.
- Moti**, hardening of, B., 461, 1153.
- Motors**, combustion processes in, and six stroke principle, B., 705.
- Motor fuel**. See under Fuel.
- Motor spirit**, (P.), B., 147, 332.
- production of, (P.), B., 709.
- vapour pressure curves of, B., 376.
- containing alcohol, B., 7, 101, 232.
- determination of hydrocarbons in, B., 284.
- Mottramite** from Bolivia, A., 707.
- Moulds** (biological), physiology of, A., 875.
- growth of, in butter, B., 220.
- on sulphite pulp, B., 240.
- effect of iron, copper and zinc on growth and pigmentation of, A., 1094.

- Moulds** (biological), formation of acids by, A., 523, 524.
- production of citric acid by, A., 394, 1333.
- colouring matter of, A., 847.
- production of gluconic acid by, A., 1457.
- sterol content and antirachitic activity of mycelia of, A., 531.
- yeast-growth stimulants from, A., 1192.
- applications of, to fermentative processes, (P.), B., 738.
- green, of decayed wood, dye from, A., 227.
- Moulds**, foundry, (P.), B., 354.
- facing composition for, (P.), B., 848.
- for silica glass, etc., (P.), B., 113.
- metallurgical, (P.), B., 26.
- coatings on, B., 249.
- sand, (P.), B., 1101.
- for casting stainless steel, (P.), B., 29.
- tungsten, (P.), B., 26.
- Moulded articles**, (P.), B., 73, 598.
- lacquered or painted, manufacture of, (P.), B., 729.
- compositions, (P.), B., 729.
- Moulding**, mixing and centrifuging machines for, (P.), B., 703.
- compositions, (P.), B., 598.
- from mica, (P.), B., 687.
- phenol-resin as, B., 852.
- materials, manufacture of, (P.), B., 853.
- from coal, (P.), B., 1019.
- mixtures, (P.), B., 687, 819.
- Mucic acid**, melting point of, A., 1148.
- ethyl ester, disulphite from, A., 819.
- Mucin** of articular liquids, A., 251.
- Muconic acid**, A., 1037.
- ethyl ester, addition of ester to, A., 1037.
- methyl hydrogen ester, A., 1273.
- Mucor**, colouring matters of, A., 264.
- Mud** of Clyde sea area, A., 930.
- Mulberry leaves**, composition of, A., 1101.
- Mulberry trees**, aluminium in juices of, A., 1200.
- Mullite**, specific heat of, A., 1362.
- Multipoles**, radiation of, A., 405.
- Munjisthin**, A., 225.
- Musa paradisiaca**. See Plantain.
- Muse ambrette**, constitution of, A., 1152.
- Muscarine**, and its chloroaurate, A., 1279.
- Muscle**, structure of, and aërobie carbohydrate formation, A., 1327.
- biochemistry of, A., 513.
- relation between chemical exchange and osmotic pressure in, A., 1449.
- permeability of cell-membranes of, A., 117.
- amylolysis and glycolysis in, after fatigue, A., 1084.
- respiration of, poisoned with iodoacetic acid, A., 1184.
- contraction of, without formation of lactic acid, A., 117.
- formation of lactic acid in, A., 866.
- lactacidogen in, A., 117.
- recovery heat in, A., 866.
- heat and osmotic change after, without lactic acid formation, A., 763.
- liberation of phosphoric acid by adenylic acid in, A., 386.
- "alactacidic," A., 1085.
- anaërobie, A., 866.
- rigor in, A., 1449.
- ammonia in, A., 647, 1185.
- production and content of, A., 513.
- and its precursors, A., 641, 1449.
- in activity, A., 1096.
- calcium content of, after thyroparathyroidectomy and "parathormone" injection, A., 127.
- coagulins of, A., 642, 1441.
- dehydrogenases of, A., 390.
- formation of lactic acid in, by enzymes, A., 1184.
- co-enzyme of, A., 654.
- inhibition of amylase of, A., 766.
- influence of oxygen on, A., 258.
- caloric quotient of lactic acid in, A., 386.
- influence of training on lactic acid content of, A., 1084.
- formation of lactic acid and hydrolysis of creatinephosphoric acid in, A., 1085.
- lactic acid production and phosphoric acid esterification in powder and pulp of, A., 520.
- effect of contraction of, on lipin content, A., 1449.
- production and decomposition of methylglyoxal in, A., 873.

Muscle, methylglyoxal and pyruvic acid in, A., 1184.
 myosin from, and its properties, A., 250.
 effect of adrenaline on phosphorus compounds of, A., 1336.
 phosphorylation and lactic acid production in, A., 1327.
 partition of potassium in, A., 1083.
 "bound potassium" in, A., 756.
 proteins, effect of buffer mixtures on solubility of, A., 250.
 effect of halogenoacetic acid poisoning on, A., 117.
 colloidal condition of, A., 249.
 sugar content of, A., 753.
 thyroxine in, A., 1096.
 atrophy and hypertrophy of, A., 114, 254.
 effect of bromoacetic acid poisoning on, A., 1449, 1450.
 poisoned with fluoride, metabolic activity of, A., 116.
 effect of yeast administration on, A., 117, 257.
 active, reaction changes of, A., 117.
 of cold-blooded animals, utilisation of carbohydrate in, A., 1184.
 poor in carbohydrate, metabolic activity of, A., 116.
 of warm-blooded animals, oxidation of lactic acid in, A., 1184.
 cardiac, effect of ions on, A., 651.
 potassium content of, A., 645.
 dying, constituents of, A., 864.
 minced, effect of lactic acid on respiration of, A., 1448.
 crustacean, rôle of arginine-phosphoric acid in metabolism of, A., 513.
 frog's, ammonia in, A., 255, 763.
 production of ammonia by long keeping of, in Barkan solution, A., 1449.
 carbohydrate content of, A., 756.
 lactic acid formation in tetanus and stimulation of, A., 867.
 oxygen consumption in contraction of, A., 866.
 toxicity of quinol to, A., 119.
 effect of contractile poisons on, A., 981.
 frozen and thawed, oxygen uptake of, A., 1085.
 breakdown and synthesis of phosphagen in, A., 1085.
 of horse, effect of visible and ultra-violet light on succinodehydrogenase of, A., 391.
 human, creatine in, A., 756.
 mammalian, heat of rigor of, A., 117.
 of mice and rats, glycogen in, A., 980.
 non-irritable, A., 1184.
 oyster's, constituents of, A., 379.
 rabbit's, relation of glycogen to creatine and creatinephosphoric acid in, A., 867.
 skeletal, effect of bromoacetic acid poisoning on phosphocreatine metabolism of, A., 1450.
 potassium content of, A., 645.
 smooth, anaphylactic reaction in, A., 264.
 of leeches, action of *d*- and *l*-camphor on, A., 1452.
 striated, calcium content of, in rickets, A., 254.
 uterine, action of pituitary extracts on, A., 269.
 washed, carbohydrate metabolism of, A., 257.
 Muscle extracts, A., 860.
 influence of co-enzyme of lactic acid formation on carbohydrate phosphoric esters in, A., 1449.
 of aquatic animals, constituents of, A., 379.
 frog's, poisoning of, by iodoacetate, A., 1085.
 Muscovite, crystal structure of, A., 415.
 Muscular exercise, recovery process after, A., 763.
 effect of, on amino-groups of blood and muscle proteins, A., 513.
 fat metabolism in, A., 979.
 gaseous metabolism in, after suprarenal removal, A., 866.
 formation of lactic acid in, after suprarenal removal, A., 1327.
 elimination of pentose in, A., 1449.
 Mushrooms, manufacture of artificial manure for culture of, (P.), B., 83.
 hydrolysis of sucrose by aqueous extracts of, A., 653.
 Musts, determination of potassium and sodium in, B., 563.
 Mustard oils, action of hydroxylamine on, A., 1310.
 action of, on skin, A., 518.
 Mutarotation in pure and mixed solvents, A., 149.
 Mutton, frozen, chemical changes in fat of, B., 779.
 Mycobacterium, carbon metabolism of species of, A., 877.
 Mycobacterium tuberculosis, germicidal efficiency of *o*-phenylphenol for, A., 877.
 Mycodermes, effect of boric acid on cultures of, A., 655.
 Myglabris pustulata, extraction of cantharidin from, B., 993.
 Myosalvarsan, A., 1437.
 Myosin, preparation of, from muscle and its properties, A., 250.

Myosin, double refraction of, and its relation to structure of muscle, A., 379.
 Myotonia atrophica, metabolism in, A., 1447.
 Myricitrin, constitution of, and its hexamethyl derivative, A., 1400.
 isoMyristicin acetoxybromide, A., 953.
 Myrrh, B., 823.
 Myrtus communis, essential oil from, B., 945.

N.

Nao-Yang-Hua. See *Rhododendron kunnewellianum*.
 Naphtha, removal of sulphur from, B., 327, 374.
 petroleum, purification and stabilisation of, (P.), B., 750.
 Naphthacenequinol diacetate, A., 1064.
 Naphthacenequinone, reduction products of, A., 1064.
 Naphthodianthrone, 4:4'-dihydroxy-, and 2:2':3:3'-tetrahydroxy-, and its tetra-acetyl derivative, A., 356.
 Naphthoflavone, and 3':4'-dihydroxy-, and their derivatives, A., 963.
 β -Naphthoflavones, mono- and di-hydroxy-, A., 1423.
 2-Naphthaldehyde, 3-hydroxy-, and its acetyl derivative, and their derivatives, A., 493.
 Naphthalene, model for, A., 1281.
 recovery of, from gases, (P.), B., 192.
 removal of, from gas, by tetralin, B., 466.
 from coal-gas, B., 6.
 from coal distillation gases, (P.), B., 192, 331.
 and its derivatives, dipole moments of, A., 23, 900.
 freezing point of, as thermometric standard, A., 899.
 solubility of, in aliphatic alcohols, A., 33.
 in furfuraldehyde derivatives, A., 901.
 reduction of, by sodium, in liquid ammonia, A., 340.
 sulphonation of, A., 474.
 reaction of, with *tert*-butyl chloride, A., 341.
 derivatives, action of sodium hydrogen sulphite on, A., 1291.
 condensations of, with dimethylolcarbamide, (A.), 614.
 2-derivatives, preparation of, A., 208.
 thioindigotins of, A., 748.
 detection of, colorimetrically, A., 375.
 Naphthalene, tribromo-, formation of, in bromination of naphthalene, A., 1407.
 tribromo-2-amino-5:8-dihydroxy-, A., 347.
 1-bromo-2-fluoro-, 2-chloro-1-bromo-, and mono- and di-fluoro-, A., 1281.
 4-bromo-1-fluoro-, fluoro-, and their picrates, difluoro-, and fluoro-mono- and tri-nitro-, A., 948.
 mono-, di-, and tri-bromodihydroxy-, and their acetyl derivatives, A., 215.
 1-chloro-, manufacture of halogen derivatives of, (P.), B., 434.
 1-chloro-2-nitro-, derivatives of, A., 342.
 halogenonitro-derivatives, reactivity of halogen in, A., 833.
 1:4-dihydroxy-, derivatives of, with aldehydes, A., 1296.
 bromination of, and di-, tri-, and tetra-bromo-1:5-dihydroxy-, and di- and tri-bromo-1:4:5-trihydroxy-, and their derivatives, A., 217.
 trinitro-, explosive properties of, B., 907.
 Naphthalenes, bromo- and bromo-mono- and -di-nitro-, reactivity of halogen in, A., 474.
 di-, tri-, and tetra-bromo-, A., 720.
 chloro-, purification of, (P.), B., 668.
 Naphthalene series, A., 344, 350, 479, 732.
 Naphthaleneazo-o-conmaric acids, A., 1285.
 Naphthaleneazocoumarins, A., 1285.
 2-Naphthaleneazobomophthalimide, A., 721.
 4-Naphthaleneazophenols, molecular compounds of, with acid halides, A., 614.
 Naphthalene-1:5-bisdiazonium fluoborate, A., 949, 1281.
 Naphthalene-1-diazonium fluoborate, 4-bromo-, A., 949.
 Naphthalenediazonium fluoborates, A., 1281.
 Naphthalene-2:3-dicarboxylic acid, preparation of, A., 88.
 Naphthalenedicarboxylic acids, bishydroxyarylamides of, (P.), B., 149.
 Naphthalene-1:5-disulphinic acid, A., 748.
 Naphthalene-green-V, A., 1052.
 Naphthalene-4-sulphonic acid, 1:2-dihydroxy-, salts of, A., 722.
 Naphthalene-6-sulphonic acid, 2:8-dihydroxy-, manufacture of arylsulphonic esters of, (P.), B., 1133.

- Naphthalenesulphonic acids, diamino- and 1-hydroxyamino-, A., 1408.
 fluoro-, and their salts and derivatives, A., 948.
 Naphthalene-1:4:5:8-tetracarboxylic acid, manufacture of vat dyes from, (P.), B., 1086.
 Naphthalene-1:5-dithioglycollic acid, and its derivatives, A., 748.
 Naphthalenethioglycollicglyoxylic acids, A., 1163.
 Naphthalene-1:2:5-tricarboxylic acid, and its methyl ester, A., 80, 232.
 Naphthalic acid, reaction of magnesium phenyl bromide and lithium phenyl with derivatives of, A., 1415.
 l-menthyl hydrogen ester, and its salts and methyl ester, A., 625.
 l-menthyl methyl ester, influence of polar solvents on rotation of, A., 680.
 Naphthalic thioanhydride, A., 88.
 Naphthalimidoacetic acid, and its derivatives, A., 727.
 Naphthalyl chloride, action of hydrogen sulphide on, A., 88.
 1:4- β -Naphthapyrone, A., 1423.
 1:4- α -Naphthapyrones, synthesis of, A., 963.
 5:8-Naphthaquinhydrone-3:6-disulphonic acid, 2:4-dibromo-1-amino-, potassium salt, and its derivative with stannous chloride, A., 347.
 1:4-Naphthaquinone, di- and tri-bromo-5-hydroxy-, and their derivatives, A., 217.
 2:3-dichloro-, A., 838.
 Naphthaquinones, reaction of, with aldehydes, A., 1296.
 and dibromo- and dichloro-, additive compounds of, with antimony and tin chlorides, A., 1061.
 Naphthaquinones, mono-, di-, and tri-bromo-, and mono-, di-, and tri-bromo-2-hydroxy-, and their derivatives, A., 215.
 tri- and tetra-bromoamino-, and their derivatives, and 2-bromo-3-hydroxy-, A., 347.
 1:4-Naphthaquinone-2-carboxylic acid, 3-bromo-, derivatives of, A., 364.
 Naphthaquinone-mono- and -di-chloroiminesulphonic acids, and bromo-, potassium salts of, A., 355.
 1:2-Naphthaquinone-6-sulphonic acid, 4-bromo-, potassium salt, A., 347.
 1:4-Naphthaquinone-6-sulphonic acid, A., 1408.
 1:4-Naphthaquinonyl-2-acetomethylamide, 3-bromo-, A., 363.
 α -Naphtha-4-thioflavone, and its derivative with diazomethane, A., 1305.
 p-2-Naphtha-1':2'-triazolylbenzeneazo- β -naphthylamine, metallic derivatives of, A., 835.
 Naphthazarin dyes, manufacture of, (P.), B., 150, 1134.
 periNaphth-1:3-diketohydrindene, 5-hydroxy-, A., 487.
 Naphthenes, determination of, in their mixtures with paraffins, B., 661.
 Naphthenic acid, solubility of metallic soaps of, B., 500.
 salts, production of, with heavy and alkaline-earth metals, (P.), B., 20.
 Naphthenic acids, distillation of, B., 374.
 Naphthen-9-phenanthreneindigo, 2-thio-. See 10-Oxy-9-oxythio-naphthyl-6-oxyphenanthrene.
 2':3'-Naphtho-1:2-anthracene. See 2:3:6:7-Dibenzanthracene-9:10-diyd.
 Naphtho-1:4:5:8-dioxans, isomeric, A., 1162.
 α -Naphthoic acid, preparation of, A., 840.
 α -Naphthoic acid, 2-bromo-, A., 1156.
 β -Naphthoic acid, 1:5:6-tribromo-3-hydroxy-, A., 215.
 3-cyano-, A., 88.
 3-iodo-, and its derivatives, A., 351.
 Naphthoic acids, brucine and quinine salts, A., 1281.
 Naphthol, Ciba, constitution of, B., 796.
 Naphthol ethers, decomposition of, by concentrated hydrochloric acid, A., 1410.
 amino-, manufacture of, (P.), B., 150*.
 α -Naphthol, manufacture of, (P.), B., 1041.
 preparation of coumarins and pyrones from, A., 1303, 1304.
 α -Naphthol, 4-bromo-2-amino-, and its diacetyl derivative, A., 215.
 4-p-nitroamino-, benzoyl derivative, A., 345.
 β -Naphthol, reduction of, catalytically, under high temperature and pressure, A., 1288.
 condensation of, with m-chlorobenzaldehyde, A., 493.
 with phthalic anhydride, A., 1292.
 additive compound of benzeneazo- β -naphthol and, A., 212.
 formation of halogen derivatives of, A., 215.
 methyl ether, reaction of, with malonyl chlorides, A., 487.
 1-sulphide, formation of, from iso- β -naphthol sulphide, A., 723.
 detection of, A., 347, 722.
 β -Naphthol, 1-amino-, hydrochloride, preparation of, A., 838.
 1:4:6-trichloro-, and its benzoate, A., 951.
 Naphthols, A., 217.
 solubility of, in water, A., 1225.
 condensations of, with secondary amines, A., 722.
 β -chloroallyl ethers of, A., 952.
 3:5-dinitrobenzoyl derivatives, A., 837.
 β -Naphthols, mono-, di-, tri-, and tetra-bromo-, and their derivatives, and 3:5:6-tribromo-1-nitro-, A., 215.
 α -Naphthol-orange, constitution of, A., 344.
 α -Naphtholphthaleins, A., 1292.
 β -Naphthol-1-sulphone, rearrangement of, and its derivatives, and 6-bromo-, A., 1153.
 β -Naphthol-1-sulphonic acid, reaction of diazosulphonates from, A., 835, 1169.
 β -Naphthol-3-sulphonic acid, and its salts and derivatives, and 1-nitroso-, A., 84, 479.
 β -Naphthol-4-sulphonic acid, 1-amino-, preparation of, A., 838.
 6-bromo-, A., 951.
 and its sodium salt, A., 1047.
 Naphtholsulphonic acids, amino-, action of bromine on, and their bromo-derivatives, A., 347.
 α -Naphtholsulphonic acids, and their derivatives, A., 1047.
 α -Naphtholsulphonic acids, 4-amino-, A., 1409.
 β -Naphtholsulphonic acids, determination of, by bromine, potentiometrically, B., 56, 531.
 β -Naphthol-6-thioglycollic acid, A., 1285.
 α -Naphthol-4:6:8-trisulphonyl chloride, A., 1047.
 α -Naphthonitrile, preparation of, from α -naphthylamine, A., 88.
 Naphtho-2':3':3':4-phenanthrene, and its dipicrate, A., 1282.
 [4:5-(Naphtho-1':2')-pyrazole (3)]-o-benzaldehyde, and its p-nitro-phenylhydrazone, A., 966.
 [4:5-(Naphtho-1':2')-pyrazole (3)]-o-cinnamic acid, and its derivatives, A., 966.
 [4:5-(Naphtho-1':2')-pyrazole (3)]-o-styrene, and its dibromide, A., 966.
 α -Naphthoquinoline, 10-chloro-, A., 97.
 Naphthoquinones, absorption spectra of, A., 892.
 Naphthoquinonedicarboxylic acid, dihydroxy-, and its diacetate, A., 1298.
 α -Naphthoxide, phenyltrimethylammonium, A., 834.
 1-Naphthylbenzoic acid, 2-hydroxy-, and its derivatives, A., 1292.
 1'-Naphthoylbenzoic acid, 3:4:5:6-tetrachloro-2:2'-hydroxy-, A., 617.
 2-Naphthoylbenzoic acid, 4:5-dichloro-, and its methyl ester, A., 1063.
 2-Naphthoyl(1)-5-bromobenzoic acid, 2-[2-hydroxy-6-bromo]-, A., 217.
 α -Naphthoylformic acid, l-bornyl and l-menthyl esters, and their conversion into substituted glycollic acids, A., 619.
 2- β -Naphthoyl-4-methylthionaphthen-3'-carboxylic acid, 6-chloro-, A., 1163.
 Naphthsultonesulphonyl chlorides, A., 1047.
 β -Naphthyl arsinosulphide, A., 1404.
 trichloromethyl carbonate, A., 212.
 methyl ether, 3-amino-, preparation of, and 3-chloro-, A., 479.
 1-Naphthylacetone, 2-hydroxy-, oxime of, A., 1070.
 β -Naphthylacetylchloroamine, velocity of intramolecular transformation of, A., 45.
 Naphthylallyl alcohols, and their derivatives, A., 724.
 α -Naphthylamine, preparation of α -naphthonitrile from, A., 88.
 α -Naphthylamine, 2-bromo-, acetyl derivative, A., 1156.
 4-bromo-, isomeric compounds of 2:6-dinitrophenol with, A., 1114.
 4-fluoro-, and its derivatives, A., 949.
 β -Naphthylamine, molecular compounds of, A., 483.
 reaction between furfuraldehyde, pyruvic acid and, A., 237.
 condensation of, with oxalyl derivatives, A., 1284.
 Naphthylamines, nitration of derivatives of, A., 950.
 camphor- and bromocamphor-sulphonates of, A., 1281.
 fluosilicates of, A., 612.
 β -Naphthylamine-6:8-disulphonic acid, bromo-, sodium salt, A., 347.
 1-Naphthylamine-7-sulphonic acid, acetyl derivative, manufacture of, (P.), B., 668.
 Naphthylaminesulphonic acids, action of bromine on, and mono- and di-bromo-, and their sodium salts, A., 347.
 α -Naphthylaminocamphor, action of light on chloroform solutions of, A., 1160.
 enol- β -Naphthylaminomethylenecamphor, A., 1300.

- Naphthylaminomethylenecamphors, stereoisomeric, rotatory dispersion of, A., 1160.
- 6- α -Naphthylbenzoic acid, 3:5-dinitro-, resolution of, and derivatives, A., 840.
- α -Naphthylcarbamic acid, esters, nitration of, and *di*- and *tri*-nitro-, esters of, A., 950.
- β -Naphthyl cyanomethyl ketone, A., 91.
- Naphthyl-1-diazonium fluoroborate, 4-fluoro-, A., 949.
- 1:4-Naphthylenebisaminomethylenecamphors, and their rotation, A., 231.
- 1:5-Naphthylenedi-(1:4-dihydroxybenzene) disulphone, A., 748.
- N*- α -Naphthyl-*N'*-ethylcarbamide, nitration of, A., 950.
- α s- β -Naphthylethylthiocarbamide, A., 1076.
- β -Naphthyl-2-furfurylamine, and its nitroso-derivative, A., 237.
- Naphthylguanidines, hydroxy-, manufacture of, for azo-dyes, (P.), B., 435.
- N*-Naphthylhomophthalimides, and their benzylidene and *p*-dimethylaminobenzylidene derivatives, A., 1155.
- 5-Naphthyliminothiohydantoin, β -hydroxy-, A., 495.
- 5- β -Naphthylmethylaminoiminothiohydantoin, A., 495.
- α -(β -Naphthylmethyl)- γ -hydroxymethylcarbamide, α -1-hydroxy-, A., 615.
- ω -1-Naphthyl- ω -methylstyrene, A., 1157.
- 1-Naphthyl-5-naphthylaminotriazoles, A., 1310.
- Naphthoxyacetic acids, derivatives of, A., 737.
- α -Naphthyl β -phenylethyl ketone, A., 948.
- 1- α -Naphthylpyridinium salts, 1-(6-bromo-2-hydroxy)-, and their derivatives, A., 216.
- β -Naphthylquinonitrole, A., 838.
- β -Naphthyl thiocyanomethyl ketone, A., 91.
- 1-Naphthylthiolacetic acid, 2-hydroxy-, A., 724.
- β -Naphthylthiolbenzoquinoneimine, A., 1295.
- Naphthylvinylcarbinols, and their derivatives, A., 724.
- Naphthyridine derivatives, A., 1309.
- Narceine, reactions of, A., 1174.
- Narcosis, disturbance of carbohydrate economy in, A., 872.
- ether, A., 980.
- carbohydrate economy in, A., 260.
- Narcotics, surface tension and adsorption of, A., 121.
- reduction of osmotic pressure in serum by, A., 121.
- action of, on intestines and on the whole animal, A., 518.
- from $\beta\beta\beta$ -tribromoethyl alcohol, (P.), B., 654.
- higher hydrocarbon gaseous, A., 518.
- non-specific, administration of, A., 872.
- Narcotine, derivatives of, A., 969.
- determination of, volumetrically, A., 752.
- Nardus stricta*. See Matgrass.
- Naringin, in marmalade made from S. African grape fruit, B., 904.
- Nasturtium officinale*. See Water-cress.
- Natrolite, crystal structure of, A., 550.
- Navigan, influence of, on blood-sugar in liver, A., 650.
- Negatives, production of, by other means than photography, (P.), B., 1074.
- Nelson Haven, tidal flat and salt marsh soils of, A., 1389.
- Nematospora gossypii*, growth factor for, A., 1458.
- Neobilirubin acid, and its derivatives, A., 497.
- Neodorm, properties of, B., 318.
- Neodymium alloys with mercury, preparation of, A., 805.
- Neodymium mercuride, A., 1381.
- nitrate, magnetic susceptibility of, A., 788.
- selenates, A., 321, 1020.
- Neon, spectrum of, A., 1343.
- excitation functions in, A., 5.
- reversal of lines in, A., 887, 992.
- Zeeman effect in, A., 1343.
- negative glow spectrum of, A., 887.
- structure and Zeeman effect in spark spectrum of, A., 779.
- ultra-violet arc and spark spectra of, A., 1103.
- extreme ultraviolet spectrum of, A., 6.
- separation of, into isotopes, A., 666.
- starting potentials of corona discharge in, A., 539.
- scattering of X-rays by, A., 1105.
- relation between intensity of multiplets of, and energy of exciting atoms, A., 277.
- energy loss and scattering of electrons by, A., 1206.
- excitation probabilities of electrons in, A., 1206.
- ionisation of, A., 1105.
- by electron impact, A., 10.
- by alkali ions, A., 542, 1206.
- Neon, ionised, spectrum of, A., 779.
- multiply-charged ions in, A., 10.
- accommodation coefficients of positive ions of, A., 992.
- electric discharges in, A., 5.
- high frequency discharges in, A., 276.
- Neon determination:—
- determination of, in mixtures with helium, A., 452.
- Neon lamp. See under Lamp.
- Neonicotine as insecticide, B., 269.
- Neonicotines, isomeric, and their picrates, A., 367.
- Neosalvarsan, trypanocidal and spirocheticidal activity of, A., 260.
- Neotheresin, A., 1453.
- Neoxanthobilirubin acid, and its derivatives, A., 497.
- synthesis of, A., 1421.
- Nepheline, A., 1390.
- tanning with, B., 854.
- Nephelometers, A., 593.
- Nephelometric analysis. See under Analysis.
- Nephelometry, A., 584.
- Nephrectomy, glycogen in liver and muscle after, A., 1181.
- Nephritis, alkalosis and acidosis in, A., 865.
- constituents of serum and cerebrospinal fluid in, A., 1181.
- reducing substances in urine in, A., 865.
- chronic, with oedema, blood-lipins in, A., 511.
- experimental, phosphatase in liver and kidneys in, A., 654.
- Nephrosis, ammonia production in, A., 115.
- blood-lipins in, A., 511.
- metabolism in, A., 1447.
- retention of nitrogen and sulphur in, A., 510.
- lipin, A., 978, 1447.
- physical properties of blood-serum in, A., 978.
- serum in, A., 759.
- physical properties of proteins of serum and serous exudates in, A., 1181.
- lipoid, A., 254.
- Nerves, excitation of, A., 1448.
- oxidative nature of impulses from, A., 384.
- metabolism of, on stimulation, A., 254, 646.
- adsorptive fixation of cocaine hydrochloride by, A., 388.
- nature of receptor of, in relation to acid taste, A., 259.
- medullated and non-medullated, absorption spectra of, A., 1442.
- Nervonic acid, synthesis of, A., 65.
- Nervous system, colloid chemistry of, A., 1088, 1454.
- central, oxygen in relation to, A., 866.
- buffering power of tissues of, A., 641.
- sympathetic, relation of lactic acid to, A., 1184.
- Nervous tissues. See under Tissues.
- Nessler tubes, cellulose covers for, A., 1389.
- "Neumann's triangle," physical significance of, A., 26.
- Neurosyphilis, diagnosis of, A., 1325.
- Neutrons, A., 995.
- Nickel, and its alloys, manufacture of, (P.), B., 1144.
- electrodeposition of, A., 1238; B., 161.
- manufacture of diaphragms of, by electrodeposition, (P.), B., 933.
- electroplating with, B., 592, 681, 763, 929; (P.), B., 1103.
- measurement of p_H of baths for, B., 548.
- influence of metals on, B., 496.
- and its resistance to corrosion, B., 300.
- plating with chromium and, (P.), B., 303.
- coating of metallic articles with, (P.), B., 932.
- pure, properties of, A., 292.
- spectrum of, A., 136.
- K-absorption spectrum of, A., 993.
- absorption spectra of solutions containing, A., 544.
- atomic scattering powers of, A., 3.
- anomalous dispersion of electrons by, A., 12.
- emissive laws of, A., 155.
- secondary emission from, by impact with helium, A., 1347.
- cathodic sputtering of, in nitrogen, A., 810.
- Hall effect in, A., 672.
- determination of electrical resistance of wires of, A., 153.
- change in resistance of, due to magnetism, A., 416, 1116.
- magnetic moment of, in chloride solutions, A., 905.
- magnetisation-temperature curves of, A., 790.
- and its alloys with iron, magnetic anisotropy of, A., 1114.
- thermoelectric power of, A., 1117.

- Nickel**, Curie points of, A., 153.
displacement of Curie point for, by pressure, A., 1216.
freezing point of, on International scale, A., 293.
permeability of, A., 790.
effect of temperature on solubility of, in milk, B., 495.
crystals, magnetostriiction in, A., 1360.
action of, on alkali salts, A., 443.
on arsenio trichloride, A., 810.
heated, action of positive ions of caesium on, A., 1348.
toxicity of, to seeds, B., 604.
catalytic, preparation of, and hydrogenation testing, A., 919.
effect of heat on, on infusorial earth, A., 1246.
production of, (P.), B., 813.
hydrogenating activity and surface structure of, A., 919.
for hydrogenation, A., 46.
poisoned by carbon monoxide, adsorption of hydrogen by, A., 902.
electrolytic, properties of, B., 930.
influence of acidity of electrolyte on structure and hardness of, B., 1100.
X-ray structure of, A., 548.
hexagonal, A., 1217.
high-grade, and its alloys, production of, (P.), B., 256.
strained, magnetic properties of, A., 1357.
- Nickel alloys** for cutting tools, (P.), B., 302.
acid-resistant, (P.), B., 120.
with aluminium and copper, B., 1055.
with chromium, (P.), B., 1015.
melting of, in hydrogen, B., 1014.
crystal structure of, A., 1364.
and with chromium and iron, B., 24.
with chromium and copper, (P.), B., 120.
with chromium and iron, B., 637.
corrosion of, A., 575.
corrosion-resistant, (P.), B., 980.
with cobalt, electrodeposition of, B., 161, 592.
with cobalt and iron, thermal expansion of, A., 1004.
magnetic, (P.), B., 353, 932.
with copper, (P.), B., 547.
lattice constants of, A., 414.
magnetic properties of, A., 1220.
thermal conductivity of, B., 117.
clastic limit of, B., 1014.
with copper and manganese, (P.), B., 207, 548*.
with copper and silver, (P.), B., 208.
with copper and zinc, (P.), B., 165*.
paramagnetism of, A., 673.
with gold, electrical conductivity of, A., 1224.
with iron, (P.), B., 165*.
production of, (P.), B., 120.
electrodeposition of, from cyanide solutions, B., 161.
 δ - and α -fields in, B., 927.
A3 points of, A., 159.
hydrogen and oxygen overvoltages on, A., 1238.
and their use in instrument construction, A., 816.
ballistic measurements of, B., 845.
for loading coils, manufacture of, (P.), B., 546.
magnetic, (P.), B., 724, 889, 1058.
manufacture of, (P.), B., 26, 764, 891*.
for transformer cores, (P.), B., 811.
metastable, B., 886.
sulphur-resisting, (P.), B., 353.
- Nickel compounds**, co-ordination, optical activity of, A., 895.
Nickel salts, magnetic susceptibilities of, A., 412.
action of sodium hypophosphite on solutions of, A., 1019.
for removal of hydrogen cyanide from coke-oven gas, B., 573.
complex, A., 1383.
absorption spectra of, A., 891.
- Nickel carbide**, catalytic decomposition of carbon monoxide by, A., 1376.
chloride, electrochemistry and spectra of solutions of, A., 687, 905.
tin chloride, crystal structure of, A., 151.
oxide, A., 924.
diffraction of electrons by thin films of, A., 1207.
effect of absorption of oxygen on conductivity of, A., 786.
as standard for the powder spectrum method, A., 1115.
oxides, crystal structure of, A., 549.
peroxides, A., 324.
phosphides, A., 922.
- Nickel perhenate**, and its ammines, A., 1139.
silicate, action of sulphur on equilibrium of, with iron, A., 1235.
sulphate ammoniate, A., 698.
sulphide, quantitative precipitation of, A., 325.
regenerated, purification of, B., 246.
- Nickel organic compounds**, optical activity dependent on co-ordinated nickel in, A., 1168.
complex, containing diacetylaldioxime, A., 938.
Nickel carbonyl, production of, (P.), B., 632.
tetrapyridine fluosilicate, A., 1381.
- Nickel detection**, determination, and separation :—
detection of, spectroscopically, A., 1143.
in steel, B., 762.
detection and determination of, in presence of cobalt, A., 455.
determination of, with dropping mercury cathode, A., 1261.
volumetrically, in presence of chromium, A., 1026.
in plating baths, B., 162.
separation of, from cobalt or ferrocobalt, A., 814.
- Nickel-copper mattes**, treatment of, (P.), B., 812.
bessemerising of, (P.), B., 765.
action of sulphuric acid on, A., 924.
- Nickel ions**, complex, determination of constitution of, A., 910.
- Nickel minerals**, A., 1146.
- Nickel ores**, treatment of, (P.), B., 120.
reduction of, with production of cracked hydrocarbons, (P.), B., 208.
containing copper and cobalt, treatment of, (P.), B., 28.
Ural, treatment of, B., 1056.
- Nickel wire**, welding of, to tungsten wire, (P.), B., 765.
change of resistance of, in magnetic fields, A., 898.
effect of torsion on length of, B., 763.
- Nicotine**, and its derivatives, A., 498.
production of, from impregnated paper, (P.), B., 91.
recovery of, (P.), B., 365.
and its salts, photodecomposition of, A., 580.
and chloro-, molecular extinction coefficients of, A., 498.
volatility of, A., 1311.
steam-distillation of, from tobacco, B., 90.
effect of heat and irradiation on solutions of, A., 1101.
activators of, for insecticides, B., 508.
comparison of rotenone, pyrethrum and, as insecticides, B., 508.
toxicity of rotenone and, to *Aphis rumicis* and mosquito larvæ, B., 990.
in paint for woolly aphid control, B., 268.
in tobacco, B., 1027.
degradation of, A., 402, 1101.
bacterial decomposition of, A., 876.
in raw tobacco, B., 653.
in tobacco smoke, B., 1027.
content of, in tobacco and tobacco-smoke, B., 222.
influence of, on blood-sugar, A., 517.
detection of, in plants, microchemically, A., 639.
determination of, in solution, and in insecticides, B., 565.
volumetrically, with silicotungstic acid, A., 639.
in tobacco, A., 132; B., 318.
in tobacco and tobacco smoke, B., 653.
in tobacco smoke, microvolumetrically, B., 905.
- Nicotinic acids**, diethylamides of, A., 740.
n- and *iso*-Nicotinic anhydrides, preparation of, A., 363.
n- and *iso*-Nicotinic acids, and their derivatives, A., 363.
N-Nicotinylanthranilanthranilic acid, and its methyl ester, A., 363.
N-Nicotinylanthranilic acid, and its methyl ester, A., 363.
N-Nicotinyglycylglycine, and its ethyl ester, A., 363.
- Niemann-Pick disease**, lipin deposits in, A., 115.
- Nile blue**, oxidation-reduction potential of, A., 1013.
- Niobium**, spectra of, A., 664.
density and crystal structure of, A., 1217.
lattice constant of, A., 671.
- Niobium arsenide** and phosphide, A., 809.
pentoxide, reactions of, with alkaline-earth carbonates and metallic oxides, A., 447.
- Niobium detection**, determination, and separation :—
analysis of, A., 57, 814.
separation of, electrolytically, from tantalum, A., 1018.
- Nitella**, osmotic adaptation of, in sugar solutions, A., 884.
- Nitrates**. See under Nitrogen.
- Nitration**, mercury catalyst in, B., 531.
in methyl-alcoholic solution, A., 346.
with nitrates, mechanism of, A., 1283.

Nitric acid. See under Nitrogen.

Nitridation, A., 721.

Nitrides, heats of formation of, A., 432.

crystal structure of, A., 414.

refractory, preparation and properties of, A., 921.

Nitriles, formation of, from aldehydes, A., 90.

use of silica gel in preparation of, A., 339.

manufacture of, with hydrogenated ring systems, (P.), B., 385.

hydrogenation of, catalytically, under reduced pressure, A., 950.

formation of amides from, A., 471.

salts of, constitution of, A., 608.

aliphatic, action of fused potassamide on, A., 1150.

unsaturated, isomerism of, A., 472.

unsaturated, determination of, A., 205.

Nitriles, amino-, action of Grignard reagent on, A., 1404.

Nitrites. See under Nitrogen.

Nitroamide, structure of, A., 52.

catalytic decomposition of, A., 1134.

Nitroamines, manufacture of, B., 917.

Nitrobacter, A., 877.

Nitrocellulose. See Cellulose nitrate.

Nitrocellulose lacquers. See under Lacquers.

Nitro-compounds, Raman spectra of, A., 1353.

aromatic, reduction of, A., 341, 1151.

with sodium alkoxides, A., 1046.

condensation of, with phenylenediamines, A., 211.

organic, decreasing inflammability of, (P.), B., 711.

determination of nitrogen in, A., 1437.

Nitrogen, atomic weight of, A., 407.

nuclear spin of, A., 136.

atoms, asymmetric, A., 75.

doubly-linked tervalent, configuration of, A., 628.

molecules, metastable, vibrating, evidence for, A., 1209.

manufacture of, B., 202, 881.

from liquid air, (P.), B., 758.

production of mixtures of hydrogen and, B., 324, 326; (P.), B., 440.

recovery of, from air, (P.), B., 1140.

fixation of, by *Azotobacter*, B., 557.

from ammonia, (P.), B., 630, 718.

by nodule bacteria, A., 876.

effect of caffeine on, A., 265.

by micro-organisms, A., 1192.

with catalytic molybdenum, A., 1095.

plant for, B., 19.

refraction in, A., 898.

dispersion and refractive index of, A., 416.

dispersion of internal energy in spectrum of, A., 403.

absorption band spectrum of, A., 1343.

afterglow spectrum of mixtures of argon and, A., 5.

cathode glow in arc spectrum of, A., 887.

band spectrum of, A., 275, 992.

high-frequency spectrum of, in presence of mercury, A., 403.

two-electron spectrum of, A., 779.

ultra-violet spectrum of, A., 5.

electric discharge in, A., 539.

ageing of ions in, A., 1207.

energy losses of electrons in, A., 12.

energy loss and scattering of electrons, A., 782.

velocity losses of slow electrons in, A., 1107.

ionisation of, A., 14.

ionised, spectra of, A., 275.

effect of temperature on spark potential of, B., 275.

changes in sparking potential of, A., 403.

specific heat of, A., 899, 1361.

compressibility of, A., 156.

triple point of, as standard temperature, A., 1221.

viscosity of, A., 32.

adsorption of, by iron, A., 1120.

by condensed atomic platinum, A., 1120.

kinetics of evolution of, from ammonium nitrite, A., 1244.

Beattie-Bridgeman equation and Bartlett's data for mixtures of hydrogen and, A., 554.

equilibrium of, with carbon monoxide and hydrogen, A., 1370.

with iron, B., 807.

solubility of, in water at high pressures and temperatures, A., 557.

ignition of mixtures of, with oxygen, A., 1240.

removal of traces of oxygen from, A., 809.

role of, in working of meadows, B., 559.

Nitrogen, active, A., 5, 330.

glow of, A., 1343.

oxidisable, A., 1209.

atomic, metastable states of, A., 5.

compressed, physical properties of, A., 553.

electrolytic combination of, A., 177.

metastable and ionised, absorption of, by magnesium, A., 1212.

non-protein, determination of, by micro-Kjeldahl method, A., 1440.

residual, determination of, by direct nesslerisation, A., 1437.

Nitrogen compounds, photochemical formation of, in air and soil, A., 1137.

Nitrogen trichloride, photosensitised decomposition of, A., 179, 578.

reaction of nitric oxide with, A., 52, 916.

trifluoride, A., 696.

heat of formation of, A., 553.

fluorides, A., 809.

triiodide, A., 182.

monoxido (*nitrous oxide*), molecular structure of, A., 287.

activated molecules of, A., 1114.

spectrum of mixed flames of hydrogen and, A., 1210.

density of, A., 1222.

viscosity of, A., 1117.

catalytic decomposition of, A., 1134.

thermal decomposition of, A., 174, 571.

on platinum, A., 918.

liquid and gaseous, Raman effects with, A., 409.

dioxide (*nitric oxide*), electronic structure of, A., 1215.

preparation of, from ammonia, (P.), B., 630.

γ -bands of spectrum of, A., 18.

band spectrum of, A., 18.

Raman spectrum of, A., 284.

sparking potentials of mixtures of, with argon, A., 1344.

diamagnetic and paramagnetic molecules in, A., 547.

magnetic moment of, A., 1114.

effect of temperature on, A., 412.

concentration of, at high temperature, A., 910.

crystal structure of, A., 150.

reactions and properties of, A., 922.

photochemical reaction between mercury vapour and, A., 442.

equilibrium between chlorine, nitrosyl chloride and, A., 1232.

catalytic oxidation of, A., 1246.

reduction of, A., 922.

reduction of nitric acid by, A., 309.

decomposition of, in presence of platinum, A., 692.

interaction between hydrogen sulphide and, in presence of water, A., 922.

action of, on alkaline hydroxides, A., 1379.

on iodine pentoxide, A., 324.

on nitrogen trichloride, A., 52, 916.

trioxide, photosensitised decomposition of, A., 1137.

tri- and tetra-oxides, dissociation constants of, A., 683.

per- or tetra-oxide, crystal structure of, A., 1218.

vapour pressure and density of solutions of, in nitric acid, A., 33.

solid, structure of, A., 548.

Raman spectrum of, A., 785.

velocity of sound in, A., 553.

measurement of velocity of dissociation of, by sound waves, A., 315.

influence of, on glowing of phosphorus, A., 17.

use of, in nitration of cellulose, B., 107.

penoxide, effect of magnetic field on absorption spectrum of, A., 1350.

crystal structure of, A., 1115.

heat capacity of, at low temperatures, A., 1362.

stability of, in presence of nitrogen tetroxide, A., 1009.

thermal decomposition of, at low pressures, A., 436.

reaction between ozone and, A., 1239.

oxides, formation of, A., 179, 1139.

in the electric discharge, A., 1018.

production of, from ammonia, B., 1048.

apparatus for, (P.), B., 840.

in atmosphere, A., 1028.

in coal gas, B., 956.

working up of, (P.), B., 63.

thermodynamics of, A., 1127.

heats of absorption of, by sulphuric acid, A., 685.

- Nitrogen oxides**, absorption of, by sulphuric acid, B., 969.
 crystallised, molecular volumes of, A., 25.
 pharmacology of mixtures of carbon monoxide and, A., 260.
- Nitric acid**, A., 33.
 constitution of, A., 1111.
 in aqueous solutions, A., 906.
 formation of, at high temperatures, A., 693.
 synthesis of, A., 920.
 manufacture of, (P.), B., 19, 61, 587, 971.
 from ammonia, B., 18, 535, 923; (P.), B., 111.
 and sulphuric acid, (P.), B., 61.
 chromium steel in plant for, A., 116.
 apparatus for storage or treatment of, (P.), B., 156.
 concentration of, B., 488; (P.), B., 293.
 heat content values for aqueous solutions of, A., 912.
 reconcentration of mixtures of sulphuric acid and, B., 60.
 freezing points of mixtures of sulphuric acid and, A., 1369.
 heat of dilution of mixtures of sulphuric acid and, A., 1128.
 velocity of absorption of oxygen by, A., 803.
 action of, on metals, in presence of hydrazine, A., 1134.
 on phosphorous acid, A., 1254.
 treatment of clay with, B., 487.
 reduction of, by nitric oxide, A., 309.
 concentrated, manufacture of, (P.), B., 61, 392, 537, 587.
- Nitrates**, structure of, A., 1113.
 formation of, from amino-acids, A., 943.
 Raman spectra of, A., 1353.
 crystal structure of, A., 784.
 reduction of, by bacteria, A., 265, 1459.
 by ferrous hydroxide, A., 323.
 decomposition of, A., 583.
 action and excretion of, A., 261.
 double, manufacture of, (P.), B., 718.
 determination of, by Grandval and Lajoux' method, A., 326, 1257.
 by electrolytic reduction, A., 1257.
 with brucine, A., 1257.
 in drinking water, B., 1076.
- Nitrous acid**, decomposition of, A., 1131.
 photochemical decomposition of, A., 578.
- Nitrites**, Raman spectra of, A., 1353.
 decomposition of, A., 583.
 apparatus for oxidation of, to nitrates, (P.), B., 971.
 reaction between aminosulphonic acid and, A., 182.
 detection of, colorimetrically, A., 186.
 determination of, A., 1259.
 with acridine dyes, A., 586.
 with the dropping mercury cathode, A., 451.
 with iodide, A., 1142.
 volumetrically, in presence of nitrates, A., 1024.
 in presence of sulphites, B., 391.
- Hyponitrites**, A., 1140.
- Nitrogen determination** :—
 determination of, A., 1257.
 by micro-Dumas method, A., 700, 971.
 by Kjeldahl method, use of steam in, A., 705.
 use of copper sulphate in, B., 87.
 selenium as catalyst in, A., 1384.
 by micro-Kjeldahl method, A., 638, 1024.
 use of boric acid in, A., 1024.
 by Pregl's micro-method, A., 856, 1142.
 by ter Meulen-Heslinga method, A., 638.
 in ammonium salts, B., 756.
 in azo- and nitro-compounds, by Kjeldahl method, A., 1437.
 in calcium cyanamide, B., 717.
 in diazo-compounds, A., 752.
 in iron and its alloys, B., 976.
 in steel and iron alloys, B., 887.
 in milk, B., 609.
 in organic compounds by Pregl's micro-method, A., 752.
 amino-, determination of, A., 1174, 1318.
- Nitro-groups**, detection of, in organic compounds, A., 1148.
 determination of, microchemically, A., 1318.
- Nitrophoska I. G. III**, pot experiments with, B., 456.
- Nitroprussic acid**, sodium salt, reaction of, with sulphides, A., 1013.
- Nitroprussic ions**, mobility of, A., 1370.
- Nitroso-compounds**, aromatic, reduction of, with sodium alkoxides, A., 1046.
- Nitroso-groups**, activation of halogens in aromatic nuclei by, A., 945.
- Nitrosomonas**, A., 877.
- Nitrosomonas europaea**, oxidising power of cells of, A., 1192.
- Nitroso-R-salt**, compounds of, with metallic salts, A., 447.
- Nitrosulphonyl chlorides**, reactions of, A., 610.
 separation of, by means of hydrazine hydrate, A., 610.
- Nitrosyl chloride**, equilibrium between chlorine, nitric oxide and, A., 1232.
 reactions of, A., 820.
 compounds, formation of, B., 969.
- Nitrosylsulphuric acid**, manufacture of stable products containing, (P.), B., 488.
- Nitrous acid**. See under Nitrogen.
- Nitryl chloride**, thermal decomposition of, A., 915.
 "Nolitt," B., 455.
- Nomenclature**, A., 548.
- Nomograms** in industrial chemistry, B., 421.
 of percentage of non-volatile matter in solutions or solids, B., 421.
- Nonane- $\omega\omega'$ -diamidine dihydrochloride**, A., 1043.
- δ -Nonan- ξ -one, δ -chloro-**, A., 714.
- Δ^7 -Noninene**, A., 61.
- $\Delta\alpha$ -Noninoic acid**, diacetoxymercure-derivative, A., 65.
- n*-Nonoic acid**, *p*-bromophenacyl ester, A., 621.
- Nonoic acid**, θ -amino-, and its derivatives, A., 76.
- Nonyl alcohol**, 1-chloro-, and its phenylurethane, A., 1032.
- Nonyl peroxide**, dihydroxy-, A., 604.
 hydrogen peroxide, α -hydroxy-, A., 1268.
- 2-*n*-Nonylbenzimidazole**, A., 601.
- o*-Nonylphenols**, and their derivatives, A., 224.
- o-n*-Nonylphenoxycetic acid**, A., 224.
- p-n*-Nonyltoluene**, and amino-, and their sulphates, A., 1158.
- 4-*n*-Nonyl-*p*-toluquinone**, and 2:5-dihydroxy-, A., 1158.
- Nopinene**, and its ozonide, A., 230.
 hydration of, A., 95.
- isoNoragathic acid**, and its methyl ester, A., 232.
- Norcantharidic acid**. See 3:6-endoHexahydrophthalic acid.
- Norephedrine**, 3:4-dihydroxy-, physiological action of, A., 517.
- Norleucines**, crystal structure of, A., 551.
- d*-Norvaleric acid**, α -amino-. See Norvaline.
- Norvaline**, formation of, by acid hydrolysis of caseinogen, A., 245.
 configuration of, A., 220.
- Norvalines**, and their derivatives, A., 124.
- Novarsenobenzol**, effect of injection of, on blood, A., 1330.
- Novatophan**, detection of, B., 90.
- Novic acid**, chloride of, A., 1159.
- Novocaine**, decomposition of solutions of, during sterilisation and keeping, B., 1026.
 amyostatic action of, A., 764.
 detection of, in presence of cocaine, A., 375.
- apoNucidine**, salts of, A., 855.
- apoNucidine**, hydroxy-, and its diperchlorate, A., 970.
- Nucleic acid**, structure of, A., 1317.
 stoichiometrical relations in reactions between dyes, gelatin and, A., 752.
- Nucleic acids**, colour reactions of, A., 1081.
- Nucleosides**, synthesis of, A., 100, 940.
- Nucleotidase**, intestinal, A., 123.
- Nutmeg oil**, A., 1101.
- Nutrition**, A., 988, 1464.
 meat in, A., 515.
 of animals, A., 867.
- Nymphaea cocc***, fermentation phenomena of, and their behaviour with yeast, B., 39.

O.

- Oak**, positive gas and water pressure in, A., 886.
- Oats**, mineral and nitrogenous constituents of, at various stages of growth, A., 1339.
 soil reaction and composition of, A., 1201.
 course of growth and nutrient intake of, B., 691.
 comparative growth efficiency of two varieties of, B., 734.
 effect of freezing of arable soils on growth of, B., 857.
 effect of manganese, copper, zinc, boron and arsenic on growth of, B., 175.
 effect of nitrogen, potash, phosphate, and calcium on tillering and yield of, B., 733.
 effect of plant foods on growth of, B., 899.

- Oats, assimilability of calcium and phosphorus from soils of W. Washington by, B., 1067.
 application of nitrogenous fertilisers to, B., 507.
 in Iowa, nitrate fertilisers for, B., 38.
 organic fertilisers for, B., 775.
 action of magnesium salts on, B., 38.
 effect of seed disinfectants on, B., 1150.
 effect of feeding with, on carbohydrato metabolism, A., 257.
 vitamin-A content of, A., 880.
- Oat smut, adsorption of copper by spores of, A., 133.
- Oat straw, decomposition of, by soil micro-organisms, B., 312.
- Obesity, nitrogen balance in treatment of, A., 1181.
- Ochronosis, colouring matter from animals with, A., 978.
- O-Octa-acetyl-*m*-phenylenediglucoside, A., 201.
- Δ^{10} -Octadecadienoic acid, zinc salt and methyl ester, A., 1271.
- Octadecahydrocarotene, A., 491.
- Octadecamethylhexaheptacontane, A., 1267.
- Octadecyl alcohol, equilibrium of hexadecyl alcohol with, A., 684.
- Octadecyl allyl ether, A., 62.
 glyceryl ether, and its diphenylcarbimide derivative, A., 62.
 iodide, compound of, with hexadecyl iodide, A., 911.
- Octahydroacridines, derivatives of, A., 1166.
- Octahydroanthraquinhydrone, 1-hydroxy-, A., 845.
- 1:2:3:4:5:6:7:8-Octahydroanthraquinone, 1-hydroxy-, A., 845.
- Octahydropyridocoline, and its salts, and 1-hydroxy-, A., 499.
- 2:3:8:7:2:3:6:7-Octamethyl-10:10-dihydroanthranol, A., 1282.
- Octamethylgalactosidomannonic acid, methyl ester, A., 940.
- Octamethyl-4- β -glucosidomannonic acid, methyl ester, A., 939.
- 4:8:12:16:23:27:31:35-Octamethyloctatriacontane, A., 1267.
- Octane, solubility of hydrogen fluoride in, A., 297.
 separation of, from petroleum, B., 660.
- l*-Octane, γ -bromo-, A., 821.
- cyclo*Octane series, derivatives in, A., 731.
- δ -Octanediol, production of, from butyrolin, A., 1332.
- Octanols, heat capacities of, A., 1362.
- cyclo*Octanone, derivatives of, A., 731.
 dinitrophenylhydrazones, A., 937.
- $\alpha\beta\gamma\delta\epsilon\zeta$ -Octaphenyl- $\Delta\alpha$ -hexadiene, A., 948.
- Octapropylporphin, synthesis of, and its derivatives, A., 746.
- Octatrienal, and its sodium hydrogen sulphite derivative, A., 1273.
- cyclo*Octene-1:2-diol, and its diphenylurethane, A., 731.
- cyclo*Octene oxide, A., 731.
- $\Delta\alpha$ -Octinene, triacetoxymercuri-derivative, A., 65.
- Octoic acid, extraction of, from aqueous solution with light petroleum, A., 1270.
p-tolyl ester, A., 600.
- Octopus vulgaris*, constituents of blood and urine of, A., 757.
- N*-Octoyle-d-isomethylamine, A., 229.
- Octyl alcohol, θ -chloro-, and its phenylurethane, A., 1032.
- Octyl alcohols, isomeric, anæsthetic action of, A., 387.
- Octyl hydrogen peroxide, α -hydroxy-, A., 1268.
- δ -*n*-Octylaminovaleic acid hydrochloride, A., 1306.
- n*-Octylmalonic acid, and its ethyl ester, A., 1094.
- n*-Octylphenols, and their derivatives, A., 224.
- o*-*n*-Octylphenoxyacetic acid, A., 224.
- N*-*n*-Octyl-2-piperidone, A., 1306.
- 1-*n*-Octyl-2-pyridone, A., 1306.
- 1-Octyl-2-pyridone, 5-iodo-, A., 234.
- Odoriferous substances, extraction of, from flowers, B., 223.
- Odour and chemical reactions, A., 962
 of organic substances, effect of ultra-violet light on, A., 872.
- Œdema, colloid osmotic pressure in, A., 115.
 following plasma-protein loss, A., 978.
 cholesterol in, A., 1447.
 blood lipins in chronic nephritis with, A., 511.
- Oenin chloride, synthesis of, A., 1424.
- Onocarpus*, seed oil from, B., 355.
- Œstrin, preparation of, A., 269.
- Oidium*, fungicidal action of sulphur on, A., 806.
- Oils, apparatus for recovery of, (P.), B., 212*.
 purification of, (P.), B., 355, 578.
 de-waxing of, (P.), B., 56.
 ultra-violet absorption spectra of, A., 1109.
 reflexion of metal atoms from surfaces of, A., 162.
 electronic interference at surfaces of, A., 406.
 determination of viscosity of, at low temperatures, B., 285.
 by Tausz viscosimeter, B., 524.
 relation between dilution and viscosity of, B., 285.
- Oils, coloured, saponification values of, B., 596.
 promoters for catalytic hydrogenation of, B., 306.
 determination of content of, in seeds, B., 595.
 determination of dissolved phosphorus in, B., 307.
 determination of sulphur in, B., 487.
- Oils, absorption, value of, B., 468.
 animal and vegetable, stabilisation of compositions of, (P.), B., 104.
 drying, B., 401, 893.
 production of, from pine oil, (P.), B., 935.
 treatment of, (P.), B., 356.
 to give properties of wood oil, (P.), B., 307.
 formation of films of, B., 551.
 incorporation of "alkyd" resins into, (P.), B., 170.
 effect of rubber anti-ageing agents on oxidation of, B., 1105.
 oxidation products of, B., 549.
 determination of saponification values of mixtures of asphalt with, B., 307.
 analysis of, A., 822.
 edible, refining of, (P.), B., 32.
 Kreis test for rancidity of, B., 816.
 rôle of anti-oxidants in preservation of, B., 816.
- Oils, essential, constitution and disinfecting properties of, A., 267.
 by-products from extraction of, from conifers, B., 1121.
 dispersion of optical rotation of, B., 275.
 distillation of, B., 611.
 bactericidal action of, B., 781.
 germicidal activity of, A., 1461.
 Hungarian, B., 697.
 Sicilian, B., 945.
 determination of, in drugs, B., 863.
 influence of comminution of drugs in, B., 905.
- Oils, essential. See also:—
- | | |
|----------------------------------|----------------------------------|
| Amber oil. | <i>Laurus camphora</i> . |
| Aniseed oil. | Lemon oil. |
| <i>Anthemis nobilis</i> . | <i>Matricaria camomilla</i> . |
| <i>Backhousia angustifolia</i> . | <i>Mentha pulegium</i> . |
| <i>Bæckea frutescens</i> . | <i>Myrtus communis</i> . |
| Bergamot oil. | Nutmeg oil. |
| Camphor oil. | Orange oil. |
| Caraway oil. | Peony seed oil. |
| <i>Cedrela toona</i> . | Peppermint oil. |
| <i>Chamaecyparis</i> . | Petitgrain oil. |
| Chenopodium oil. | <i>Phellodendron japonicum</i> . |
| Coriander oil. | <i>Picea sitchensis</i> . |
| <i>Dalbergia parviflora</i> . | Pino oil. |
| <i>Delphinium</i> . | <i>Pinus monticola</i> . |
| Dill oil. | <i>Pyenanthemum miticans</i> . |
| Eucalyptus oil. | <i>Ruta</i> . |
| <i>Ferula galbaniflua</i> . | <i>Salvia</i> . |
| <i>Geijera</i> . | Sandalwood oil. |
| Geranium oil. | <i>Taiwania cryptomeroides</i> . |
| Hyacinth. | <i>Tsuga heterophylla</i> . |
| <i>Juniperus scopulorum</i> . | <i>Zieria Smithii</i> . |
| <i>Laserpitium hispidum</i> . | |
- Oils, ethereal, oleonaphtha for absorption of, from water, B., 611.
 germicidal action of, B., 700.
 detection of, B., 274.
- Oils, fatty, composition of, B., 1105.
 extraction of, (P.), B., 32, 71, 1146.
 solvents for, B., 894.
 recovery of, from blubber, etc., (P.), B., 259.
 optical activity of, B., 849.
 action of silent electric discharge on, B., 32.
 laboratory bleaching technique for, B., 684.
 high-pressure hardening of, B., 641.
 heat-treatment of, (P.), B., 125.
 hydrogenation of, at high pressures and temperatures, B., 551.
 by "wet process," B., 550.
 using steam, B., 727.
 prevention of atmospheric oxidation of, (P.), B., 816.
 splitting of, B., 595.
 sulphonation of, (P.), B., 684.
 preservation of, (P.), B., 935.
 stabilisation of, (P.), B., 874.
 lubricating properties of, B., 469.
 reaction of, with sulphur monochloride, B., 727, 894.
 compositions containing, (P.), B., 259.
 manufacture of thermoplastic products from, (P.), B., 501.
 hardened, nutritive values of, A., 867.

Oils, fatty, iodised, determination of chlorine and iodine in, B., 1018.

Portuguese, fluoroscopic analysis of, B., 983.

sulphonated, B., 894.

effect of heat on dispersions of, B., 1060.

manufacture of emulsions, etc. from, (P.), B., 501, 1146.

analysis of, B., 935.

detection of, B., 551.

determination of alkali-combined sulphuric acid in, B., 307.

thickened, modification of properties of, (P.), B., 450.

unsaturated, absorption of oxygen by, B., 551.

determination of velocity of oxidation of, B., 641.

colour reactions of, B., 402.

bleaching test for, B., 31.

relation between acidity and titer of, B., 596.

"periodine" values of, B., 258.

analysis of, B., 1105.

detection of, colorimetrically, B., 32.

determination of lecithin in, B., 641.

determination of rancidity of, B., 550.

Oils, fatty. See also :—

Abutilon oil.

Allanblackia.

Balanitis mayumbensis.

Brazil nut oil.

Camellia oil.

Cashew nut-shell oil.

Castor oil.

Cherry kernel oil.

Coconut oil.

Coriander oil.

Cottonseed oil.

Irvingia robur.

Kapok oil.

Kōryō oil.

Linseed oil.

Mimusops ebolowensis.

Moquilia tomentosa.

Cenocarpus.

Oiticica oil.

Olive oil.

Palm oil.

Peanut oil.

Pilchard oil.

Pine oil.

Pumpkin-seed oil.

Rapo oil.

Ribes rubrum.

Rye oil.

Salmon oil.

Sandal-seed oil.

Sapoto oil.

"Scheiber" oil.

Sesame oil.

Soja hispida.

Stimposia scheffleri.

Sumac oil.

Tonka-bean oil.

Tung oil.

Turkey-red oil.

Udilo-seed oil.

Oils, fish. See Fish oils.

fuel. See Fuel, oil.

halogenated and unhalogenated, irritative properties of, A., 650.

heavy, burner for, (P.), B., 11.

use of, in manufacture of carburetted water-gas, (P.), B., 576.

Oils, hydrocarbon, production of, from acetylene, B., 1033.

treatment of, (P.), B., 55, 380, 473, 474, 528, 578, 873, 1002, 1038.

apparatus for heat-treatment of, (P.), B., 578.

refining of, (P.), B., 55, 474, 794, 915, 1084, 1131.

condenser for, (P.), B., 832.

purification of, (P.), B., 146, 193*, 750, 873.

removal of acids from, (P.), B., 621.

removal of sulphides from, (P.), B., 665.

removal of sulphur from, (P.), B., 1038.

removal of tar acids from, (P.), B., 528.

removal of waxes from, (P.), B., 665, 1039.

atomisation of, (P.), B., 962.

absorption of gases in, (P.), B., 916.

separation and condensation of vapours of, (P.), B., 382.

cracking of, (P.), B., 54, 146, 192, 380, 381, 472, 663, 750, 795,

832, 914, 961, 1037, 1083.

pressure still for, (P.), B., 832.

distillation and cracking of, (P.), B., 380.

tube still for, (P.), B., 961.

distillation of, (P.), B., 380, 577, 664, 749, 915, 1037.

apparatus for, (P.), B., 664, 749, 1037.

from refinery gases, (P.), B., 381.

vacuum distillation of, (P.), B., 749.

fractionation of, (P.), B., 192.

dehydration of, (P.), B., 619.

catalytic hydrogenation of, (P.), B., 872, 1002.

conversion of, (P.), B., 10, 529, 1002, 1038.

vacuum conversion of, (P.), B., 381.

production of sulphonic acids from, (P.), B., 332.

crude, separation of, from natural gas, (P.), B., 663.

heavy, continuous distillation of, (P.), B., 55.

conversion of, into lighter products, (P.), B., 104.

production of gas and aromatic hydrocarbons from, (P.), B., 233.

Oils, hydrocarbon, high-boiling, conversion of, (P.), B., 663.

light, washed, neutralisation of, (P.), B., 578.

low-boiling, production of, (P.), B., 1001.

prevention of gum-formation in, (P.), B., 192, 236.

refined, viscous, (P.), B., 579.

viscous, (P.), B., 1038, 1039.

Oils, insulating. See Insulating oils.

lubricating. See Lubricating oils.

Oils, mineral, origin of, A., 818.

from S. Romedio, B., 660.

production of, by pressure distillation of coal, B., 51.

extraction of, from coal hydrogenation residues, (P.), B., 431.

fractional extraction of, (P.), B., 831.

treatment of, (P.), B., 331.

apparatus for, (P.), B., 579.

refining of, B., 1081; (P.), B., 384, 474, 961, 1038.

with production of sulphonates, (P.), B., 751.

purification of, (P.), B., 528.

contact filtration of, B., 707.

filtration material for, (P.), B., 530.

dehydrator for, (P.), B., 794.

removal of organic acids from, B., 1128.

removal of naphthenic acids from, B., 429.

removal of solid particles from, (P.), B., 288.

separation of unsaturated compounds from, (P.), B., 1002.

bleaching of, (P.), B., 236*.

separation of, from bleaching clay, (P.), B., 474.

decolorisation of, and their distillates, (P.), B., 55, 1079.

cracking of, (P.), B., 578.

apparatus for, (P.), B., 54, 577, 1001.

still for, (P.), B., 235.

mechanism of, B., 231.

effect of time and temperature on, B., 327.

prevention of coke-formation in, (P.), B., 55.

in baths of molten metals, B., 327.

distillation of, (P.), B., 234, 332, 471, 900.

apparatus for, (P.), B., 234, 235.

under high vacuum, (P.), B., 577.

higher fatty acids in distillates from, B., 327.

separation of, from products of destructive distillation, (P.), B., 190.

hydrogenation of, B., 231.

destructive hydrogenation of, (P.), B., 431, 709.

modification of physical properties of, B., 238.

solidification of, (P.), B., 916.

chart for estimation of viscosity index of, B., 829.

oxidisability of, B., 284.

prevention of oxidation of, (P.), B., 816.

catalytic oxidation of, A., 932.

preparation of higher fatty acids from, by oxidation with air, A., 821.

treatment of liquid oxidation products of, (P.), B., 620.

stabilisation of, (P.), B., 750, 874.

artificial ageing of, B., 957.

lubricating properties of, B., 469.

stabilisation of compositions of, (P.), B., 104.

production of mixture of coal and, (P.), B., 188.

separation of, from emulsions, (P.), B., 473.

refining of hydrocarbons from, (P.), B., 147.

production of sulphonic acids from, (P.), B., 474.

recovery of sulphur dioxide from, (P.), B., 56*.

working-up of sulphuric acid from washing of, (P.), B., 332.

carcinogenic potency of, A., 1083.

from the Benois oil fields, B., 1033.

crude, specific heats of, and their residues when topped to 100°, B., 1128.

preheating of, B., 377.

action of sulphuric acid on products of cracking of, B., 283.

Boryslaw, hydrogenation of residues from, B., 52.

Emba, naphthenic acid in, B., 283.

Grozni, bright stocks from, B., 283.

Sakhalin, B., 283, 429.

Shirak, B., 283.

Surakhani, B., 374.

Ural, B., 1033, 1034.

furnace, cracking of, at low pressure, B., 187.

heavy, distillation of, B., 429.

gasification of, (P.), B., 287.

light, analysis of, B., 871.

determination of hydrocarbons in, A., 284.

- Oils, mineral, mixed, viscosity and flash points of, B., 101.
 oxidised, acetyl value of, B., 829.
 Ragusa, hydrogenation of, with ferric chloride and oxide as catalysts, B., 374.
 Russian, air in refineries for, A., 376.
 used, regeneration of, B., 829.
 determination of, in sludge, B., 376.
 burette for determination of unsaturated and aromatic hydrocarbons in, B., 53.
 Oils, neutral, production of, (P.), B., 212*.
 petroleum. See Petroleum oils.
 polymerised and oxidised, hydrogenation of, B., 210.
 sulphonated, B., 211.
 determination of inorganic impurities in, B., 551.
 switch. See Switch oils.
 textile, examination of, B., 501.
 transformer. See Transformer oils.
 turbine. See Turbine oils.
 vegetable, refining of, for medicinal use, (P.), B., 125.
 solvent extraction of, B., 401.
 properties of, B., 469.
 substitutes for, (P.), B., 1018.
 structure viscosimetry of, B., 767.
 decomposition of, catalytically, A., 822.
 with high acetyl values, pyrolysis of, B., 124.
 fixed, electric moments of, A., 895.
 of Union of S.S.R., B., 258, 501.
 Oil cakes, production of, B., 1105.
 Oil emulsions. See under Emulsions.
 Oil fuel. See under Fuel.
 Oil gas. See under Gas.
 Oil mills, yield differences in, B., 401.
 Oil of amber. See Amber oil.
 Oil palms. See Palms, oil.
 Oil sands. See under Sands.
 Oil seeds, extraction of oil from, (P.), B., 402.
 determination of fat content of, B., 355.
 determination of fats and moisture in, B., 258.
 Oil stills. See under Stills.
 Oil wells, chemical aspect of drilling muds from, B., 574.
 recovery of pressure gas from, (P.), B., 1036.
 Ointments, pharmacology of, A., 119.
 resorption of alkali salicylates from, A., 1452.
 mixture of metals or oxides with, (P.), B., 179.
 for protection against infectious diseases, (P.), B., 905.
 mercury, grey, determination of mercury in, B., 1027.
 Oiticica oil, B., 124, 449.
 Oleaginous materials, apparatus for treatment of, (P.), B., 684.
 Oleanolic acid, derivatives of, A., 1159.
 Oleastene, and its ozonide, A., 597.
 Olefines, formation of, from alkyl-aniline hydrobromides, A., 833.
 polymerisation of, (P.), B., 333.
 decomposition and polymerisation of, B., 830.
 absorption of, (P.), B., 148.
 by sulphuric acid, (P.), B., 192.
 separation of, from paraffins, by distillation, (P.), B., 709.
 addition of iodo-oxycyanogen to, A., 831.
 hydration of, to alcohols, A., 1267.
 manufacture of alcohols from, (P.), B., 12.
 conversion of, into other hydrocarbons, (P.), B., 10.
 manufacture of condensation products of unsaturated aromatic hydrocarbons and, (P.), B., 194.
 addition of mercuric salts to, A., 502.
 reactions of, with sulphuric acid, B., 575.
 aliphatic, detonation characteristics of, B., 661.
 higher, nitrosates and nitrosites of, A., 194.
 Olefine series, nuclear syntheses in, A., 709.
 Olefinic acids, A., 935.
 condensation of, with benzene and its derivatives, A., 1290.
 Oleic acid, purified, preparation and properties of, B., 595.
 parachor of, A., 149.
 action of heat on, A., 1034.
 oxidation of, by gaseous oxygen, without catalysts, A., 1395.
 by hydrogen peroxide, A., 1271.
 hydrogenation of, A., 1034.
 action of concentrated sulphuric acid on, A., 1271.
 manufacture of basic derivative of, (P.), B., 237.
 formation of elaidic acid from, A., 601.
 sodium salt, hydrosols, A., 1367.
n-butyl ester, (P.), B., 1061.
 Oleic acid, metallic soaps, solubility of, B., 500.
 Oleic acid, hydroxy-, from ergot oil, constitution of, A., 602.
 isoOleic acid, formation of, in hydrogenation of sunflower oil, B., 210.
 so-called, influence of, on hardening of fats, B., 683.
 Olein, analysis of, B., 32.
 Oleines, Mackay test for, B., 124, 402.
l-Oleodibromostearic acid, A., 1271.
 Oleodichlorostearic acid, formation of stearolic acid from, A., 1271.
 Oleodizoomarin bromide, A., 602.
 Oleodihydroxystearic acids, A., 1271.
 Oleolinoleo- α -lecithin bromide, A., 600.
 Oleolinoleo- β -lecithin, A., 1033.
 Oleomargarine, colouring matter for, (P.), B., 695.
 Oleum chenopodii, chemical and biological analysis of, B., 697.
 Oleum ricini, tests of, B., 697.
 Oleyl alcohol, action of concentrated sulphuric acid on, A., 1271.
 Oligodynamy, dilution in, A., 396.
 Olives, constituents of, A., 1198, 1199.
 lipase of, A., 274.
 mannitol in, A., 130, 1198.
 separation of oleastene from, A., 597.
 removal of oil from, (P.), B., 1146.
 green, pickling of, B., 1072.
 ripe or green, packaging of, (P.), B., 861.
 Olive oil, effect of ultra-violet light on, B., 210.
 decomposition of, catalytically, A., 822.
 lipase of, A., 274.
 sulphur, preparation and utilisation of, B., 641.
 refined, analysis of, B., 1060.
 detection of adulterants in, B., 849.
 Omnopon. See Pantopon.
 Onions, effect of crushed root of, on Licsegang rings, A., 307.
 Onium salts, absorption of light by, A., 544.
 Ononetin, A., 738.
 Ononin, and its acetyl derivative, A., 738.
 Ooeyan, A., 1066.
 Ophorite, aluminium, (P.), B., 464.
 Ophthalmic solutions, stability of, B., 945.
 Opianic acid, A., 484, 1293.
 α -Opianic acid, ethyl carbethoxymethyl and benzyl esters, A., 1293.
 ψ -Opianic acid, benzyl ester, A., 1293.
 Opium, effect of preparations of, on blood-calcium and -sugar, A., 120.
 manufacture of morphine from, (P.), B., 1122.
 determination of morphine in, B., 89, 135, 463, 565, 905.
 Optical activity, rules and superposition of, A., 786.
 of electrolytes, A., 796.
 and absorption spectra, A., 1209.
 and polarity of substituent groups, A., 625, 961, 965, 1159, 1160.
 and theory of coupled substances, A., 895.
 antipodes, physical properties of, A., 1414.
 properties of heterogeneous uniaxial structures, A., 787.
 rotation. See Rotation.
 Optically active compounds, X-ray analysis of, A., 290.
 molecular symmetry of, A., 1356.
 Oranges, composition of, B., 215.
 changes in, during ripening, A., 882.
 juice and pulp of, used for orangeade, B., 414.
 pigment in skin of, A., 846.
 vitamin-C in, A., 1196.
 Orange-flower water, fluorescence of, B., 863.
 Orange oil, Italian, B., 946.
 South African, B., 45.
 Orange seed meal, protein fraction from, A., 661.
 Orchards, concentration of constituents in soil solution of, B., 39.
 β -Orcinol, and *di*bromo-, A., 1048.
 Ores, concentration of, agents for, (P.), B., 547, 932.
 by flotation, (P.), B., 813.
 flotation of, B., 763.
 frothing agent for, (P.), B., 256.
 at N. Broken Hill, N.S.W., B., 544.
 froth flotation of, (P.), B., 301.
 crushing of, (P.), B., 424.
 roasting of, in muffle-retort furnace, (P.), B., 980.
 roasting and sintering of, (P.), B., 847.
 apparatus for heat-treatment of, (P.), B., 209*.
 smelting of, and recovery of by-products, (P.), B., 26.

- Ores, chloride volatilisation of, B., 637.
 development of cyanide process of treatment of, B., 1101.
 leaching of, (P.), B., 764.
 leaching and washing of, using gas, (P.), B., 814.
 reduction of, (P.), B., 209*, 889, 1057.
 and conversion of hydrocarbons, (P.), B., 209*.
 with gases, (P.), B., 930.
 rotary furnaces for, (P.), B., 723.
 recovery of metals from, (P.), B., 547.
 apparatus for classification of, (P.), B., 1101.
 with high sulphur content, roasting and sintering of, (P.), B., 764.
 Bulgarian, A., 707.
 Canadian, B., 887.
 complex, treatment of, by flotation, (P.), B., 848.
 fine, sizing of, B., 252.
 oxide, furnaces for pre-reduction, etc. of, (P.), B., 723.
 pyritic, recovery of sulphur from, (P.), B., 810.
 Rumanian, and extraction of metals therefrom, B., 763.
 stannite, from Oonah Mine, Tasmania, A., 1029.
 sulphide, flotation of, (P.), B., 163.
 roasting of, (P.), B., 164.
 apparatus for, (P.), B., 496.
 sintering machine for blast-roasting of, (P.), B., 447.
 chloridising roasting of, (P.), B., 353.
 washing of, (P.), B., 814.
 chlorination of, (P.), B., 302.
 production of metals from, (P.), B., 27, 547, 847.
 recovery of sulphur from, (P.), B., 925.
 and phosphate, concentration of, (P.), B., 1101.
 Canadian, leaching of, B., 887.
 determination of chromium and vanadium in, B., 299.
 Orocelone, constitution of, A., 1298.
 Organs, animal, iron content of, A., 861.
 formation of methæmoglobin by anti-anæmic extracts of, A., 1323.
 purine content of, A., 111.
 vegetative, function and metabolism in, A., 1448.
 Organic compounds, dipole moments and structure of, A., 895.
 structure and anti-oxidising properties of, B., 1005.
 arrangement of electrons in, A., 25.
 physical constants of, A., 30.
 refractive indices of, A., 1214.
 absorption spectra of, A., 1209.
 spectra of decomposition and synthesis of, by electric discharge, A., 318.
 Raman spectra of, A., 21.
 Raman spectra and constitution of, A., 545.
 Raman effect in, A., 145.
 absorption of ultra-violet light by, A., 144.
 electrolysis of, in liquid ammonia, A., 1053.
 electricity liberated during reactions of, A., 703, 915.
 pure, dielectric constants of, A., 148.
 freezing point of, A., 1008, 1361.
 activity coefficients and adsorption of, in solution, A., 566.
 thermal data for, A., 42, 1222, 1363.
 thermal decomposition of, A., 819.
 stereochemistry of, A., 195.
 quinquivalent nitrogen in, A., 42.
 bromination of, A., 193.
 fluorination of, A., 611.
 use of copper chromite in hydrogenation of, A., 598.
 oxidation of, by chromic acid, A., 460.
 with peracetic and perbenzoic acids, A., 1290.
 photochemical oxidation of, (P.), B., 1133.
 action of aryl iododifluorides on, A., 611.
 action of hydrogen peroxide on, A., 819.
 action of lead tetrafluoride on, A., 611.
 reactions between mineral compounds and, A., 710.
 alteration in properties of, by complex formation, A., 206.
 additive compounds of, with boron trifluoride, A., 1404.
 from destructive hydrogenation, separation of, (P.), B., 1040.
 of high molecular weight, extraction of, (P.), B., 566.
 aliphatic, polyhalogeno-, activity of halogens in, A., 597.
 aromatic, determination of constitution of, by replacement of substituents, A., 78.
 catalytic oxidation of vapours of, (P.), B., 834.
 formation of chloranil from, and use of reaction in analysis, A., 623.
 branched, hydrogenation of, over nickel, A., 719.
 Organic compounds, cyclic, hydrogenation of, B., 833.
 fused, magnetic rotation of, A., 148.
 heteropolar, absorption spectra of, A., 544.
 homopolar, constitution and absorption of light by, A., 144.
 molecular structure of, A., 153.
 stability of, A., 949.
 open-chain, relation between structure and boiling point of, A., 25.
 oxidisable, preservation of, (P.), B., 875.
 oxygenated, catalysts for synthesis of, (P.), B., 621.
 manufacture of, (P.), B., 148, 194, 289, 666.
 polymerised, macromolecules and micelles in, B., 852.
 solid, specific heat of, A., 1361.
 slightly soluble, solubilities of, in water, A., 793.
 volatile, analysis of, A., 1437.
 identification of, A., 857.
 analysis of, by use of chromic acid, A., 1437.
 by Pregl's microchemical method, A., 374.
 detection of, A., 971, 1174, 1318.
 precipitable by potassium mercuric iodide, determination of, potentiometrically, A., 1318.
 determination of halogens in, A., 856, 1437; B., 1121.
 by liquid ammonia-sodium process, A., 1393.
 determination of hydroxyl groups in, A., 752, 1035.
 determination of metals in, by distillation, A., 1025.
 determination of bound oxygen in, B., 616.
 determination of nitrogen in, A., 752.
 determination of phosphorus in, A., 856.
 determination of silver in, A., 1259.
 determination of sodium in, A., 1438.
 determination of sulphur in, by calorimetric bomb, A., 1438.
 Organic materials, ageing of, B., 950.
 Organic residues, tenacity of, A., 1408.
 Organism, animal, detoxication in the, A., 120.
 Organisms, fermenting action of bile salts on, A., 1091.
 living, growth of, in metallic containers, A., 652.
 paracrystalline, A., 1081.
 See also Micro-organisms.
 Organo-metallic compounds, physical chemistry of, A., 552.
 aromatic, heat capacities of, A., 1362.
Orobis niger, arbutin from, A., 274.
 Orotic acid, synthesis of, A., 851.
 Orotic acid, 2-thio-, and its salts and derivatives, A., 495, 1309.
 Orthite-allanite, crystallographic relation between epidote-zoisite and, A., 289.
 Oryzanin, isolation of crystals of, from rice polishings, A., 881.
 Osazones, formation of, A., 69.
 Osazonogenic groups, A., 69.
 Osmium, constitution of, A., 280.
 atomic weight and isotopes of, A., 1208.
 specific heat of, A., 674.
 Osmium tetroxide poisoning. See under Poisoning.
 sulphide, action of oxidising agents on, A., 1141.
 Osmium determination and separation :-
 determination and separation of, A., 814.
 Osmometers, A., 1230.
 Osmosis, B., 227.
 thermodynamics of, A., 35.
 equilibria in, A., 163, 560.
 in liquid systems with constant composition, A., 680, 795.
 with "inactive" membranes, A., 422, 1007.
 See also Electro-osmosis.
 Osmotic pressure, measurement of, A., 423, 680, 1367.
 of colloidal solutions, A., 1008.
 effect of light on, A., 564.
 of concentrated solutions, A., 564.
 Osteitis fibrosa produced by hyperparathyroidism in guinea pigs, A., 114.
 Osteochondritides, inorganic blood chemistry in, A., 865.
 Osteomalacia, blood chemistry in, A., 865.
 Ovalbumin, non-solvent and hydration spaces in solutions of, A., 797.
 electrophoretic velocity of, A., 564.
 dyed denatured, for testing pepsin and trypsin, A., 874.
 Ovarikrin, effect of, on lactic acid and sugar in blood, A., 1462.
 Ovary, extracts for stimulation of, A., 527.
 relation between function of, and mineral content of blood, A., 384.
 and iodine in blood, A., 761.
 and lipid metabolism, A., 384.
 liquid from cyst of, A., 864.

- Ovens, doors for, (P.), B., 474.
 linings for, (P.), B., 1029.
 for gas and coke production, straightening walls of, (P.), B., 104.
 for heating foods, (P.), B., 565.
 briquette, (P.), B., 50*.
 cooking, thermometers for, (P.), B., 135.
 cylindrical, for distillation of coal or lignite, (P.), B., 189.
 drying tunnel, (P.), B., 370, 517.
 gas-fired, burners for, (P.), B., 1085.
 horizontal, doors for, (P.), B., 56.
 recuperative, (P.), B., 702.
 retort, discharging of, (P.), B., 1085.
 coking, (P.), B., 792.
 roasting, (P.), B., 951.
 tunnel, firing of porcelain in, B., 749.
- Ox-p-acetamidoanilide**, A., 210.
- 12:5-Oxadiazoles**, formation of, from mustard oils, by action of hydroxylamine, A., 1310.
- Oxalatoarsenious acid** and its salts, A., 1254.
- Oxalatotetrammincobaltic salts**, A., 1116.
- Oxaldi- β -4-methoxyphenylethylamide**, A., 839.
- Oxaldi- β -trimethoxyphenylethylamides**, A., 839.
- Oxalic acid**, electrolysis of, A., 821.
 solubility of, in hydrochloric acid, A., 1225.
 decomposition of, by arsenic acid, A., 1132.
 effect of sulphur trioxide on decomposition of, by sulphuric acid, A., 315.
 reaction between iodic acid and, A., 690.
 hydrated, structure and properties of, A., 412.
 occurrence and determination of, in blood, A., 1440.
- Oxalic acid, salts**, bacterial oxidation of, A., 66.
 complex, A., 66.
 alkali salts, formation of, from carbon dioxide and metals, A., 921.
 aluminium salts, manufacture of, (P.), B., 718.
 calcium salt, preparation of, from calcium cyanamide, A., 695.
 crystals of, in plant cells, A., 133.
 quantitative precipitation of, in presence of arsenate, A., 56.
 carbamide salt, coloration of crystals of, A., 672.
 lanthanum salt, solubility of, in water, A., 677.
 lanthanum alkali salts, A., 712.
 lead salt, dihydrate of, A., 66.
 complex molybdenum salts, A., 1035.
 potassium salt, oxidation of, by air, A., 175.
 action of, on copper ferrocyanide, A., 695.
 on iodine, A., 1136.
 zirconium salt, A., 696.
- Oxalic acid, alkyl esters**, and their conversion into alkyl oxamates, A., 1397.
 ethyl ester, preparation of, A., 1272.
 Raman spectrum of, A., 1353.
 ethylene ester, isomerism of, and methyl β -hydroxyethyl ester, A., 67, 1036.
- Oxaloacetic acid**, phytochemical reduction of, to malic acid, A., 1091.
- Oxalyl chloride**, action of, on fluorene-9-carboxylic acid, A., 1414.
 molecular compound of, with *p*-benzenecazophenol, A., 613.
- 2-Oxalylamidopyridine-3-carboxylic acid**, A., 852.
- N-Oxalyl-4:5-dimethoxyanthranilic acid**, A., 243.
- N-Oxalyl-4:5-dimethoxyanthranilic acid, esters of**, A., 243.
- N-Oxalylmethoxyanthranilic acids, dimethyl esters**, A., 1312.
- Oxamic acid**, alkyl esters, formation of, from alkyl oxalates, A., 1397.
- Ox-p-aminoanilide dihydrochloride**, A., 210.
- Oxanil**, A., 339.
- Oxazines**, oxidation-reduction potential of, A., 1013.
- isoOxazole- ψ -bases**, A., 369, 497.
- isoOxazole-5-carboxylic acid**, derivatives of, A., 968.
- isoOxazoline oxides**, A., 102.
- Oxdiethylamide**, sodium copper derivative, A., 77.
- Oxethylamide**, sodium copper and nickel derivatives, A., 77.
- Oxidation**, A., 238, 842, 844, 959.
 mechanism of, A., 389, 390.
 determination of agents for, A., 1257.
 inductors for, A., 1017.
 catalyst for, (P.), B., 639.
 autocatalysis in, A., 175.
 effect of dyes on, A., 765.
 in the animal body, A., 866.
 asymmetric, A., 1162.
- Oxidation**, biological, rôle of phosphates in, A., 1325.
 induced, A., 803.
 partial, of liquids, A., 805.
- Oxidation-reduction with yeast**, A., 125.
 potential. See under Potential.
- Oxides**, radiation of, A., 1210.
 active, A., 692, 804, 1000, 1018, 1121, 1235.
 aliphatic, action of, on aromatic compounds, A., 1281.
 amphoteric, hydrates of, A., 183, 1369.
 highly-refractory, fusion diagrams of, A., 567.
 hydrated, A., 420, 432, 567, 692, 797, 799, 804, 1000, 1018, 1121, 1235.
 organic, dissociable, A., 954, 1052.
 solid, electronic conductivity of, A., 785.
 See also Metallic oxides.
- α -Oxides**, reactions of, with amino-acid esters, A., 830, 1154.
- Oxidobis- β -chlorodiethyl sulphide**, and its diphenoxy-derivative, A., 464.
- 2:3-Oxidocamphane-3-carboxylic acid, 2-hydroxy-**, A., 1068.
- α -Oxidodecane**, formation of α -amylpimelic acid from, A., 67.
- α -Oxidododecane**, and its formation from dodecane- $\alpha\mu$ -diol, A., 62.
 formation of α -heptylpimelic acid from, A., 67.
- $\alpha\beta$ -Oxido-esters**, action of magnesium organic compounds on, A., 354.
- $\alpha\beta$ -Oxidoketones**, action of magnesium organic compounds on, A., 354.
- Oxidoreductases**, A., 1189.
- oo' -Oxidotetraphenylethylene**, and its sulphide, A., 1305.
- $\beta\gamma$ -Oxidotriphenylpropyl alcohols**, and their peroxide, A., 354.
- Oxime**, $C_{18}H_{15}O_2N$, from beech wood creosote, B., 660.
- Oximes**, A., 937.
 isomerism of, A., 844, 1057, 1156.
 co-ordination compounds of, A., 353.
 action of thiocarbimides on, A., 210, 842, 1273.
- Oximino-compounds**, bromonitroso-derivatives of, A., 1274.
- "Oxinate"**, precipitations with, A., 1259.
- Oxonitin**, A., 243, 636, 1313.
- Oxyacanthine**, constitution of, A., 636.
 methyl ether hydrochloride, A., 242.
- Oxycellulose**, formation of, A., 828.
 action of dilute sodium hydrogen carbonate solutions on, B., 876.
 distinction between hydrocellulose and, B., 836.
 detection of, B., 478.
 in bleached cotton goods, B., 836.
 determination of, B., 340.
 in bleached cotton, B., 879.
- Oxycholesterol** in relation to intermediary cholesterol metabolism, A., 380.
- Oxycinchophen**, determination of, colorimetrically, in urine, A., 1034.
- Oxycocicyanin chloride**, synthesis of, A., 1425.
- Oxycyanogen**, A., 1043.
- Oxycyanogen, iodo-**, addition of, to olefines, A., 831.
- Oxydehydrodeguelin**, A., 1065.
- 2:5-endoOxy-2:3-dihydro-1:3:4-thiadiazole, 2-amino-**, A., 369.
- Oxygen**, atomic weight and isotopes of, A., 543, 1348.
 manufacture of, B., 881.
 from liquid air, (P.), B., 758.
 from lime and chlorine, B., 199.
 for use in gas-protection appliances, (P.), B., 540.
 spectrum of, A., 404, 1343.
 red coronal line in, A., 5.
 dispersion of internal energy in, A., 403.
 ionised, A., 779, 887.
 absorption spectrum of, at high temperatures, A., 992.
 in various states, A., 404.
 absorption band spectrum of, A., 539.
 two-electron spectrum of, A., 779.
 ultra-violet spectrum of, A., 5, 1343.
 spectrum of mixtures of helium and, A., 1.
 refraction in, A., 898.
 attachment of free electrons to neutral molecules in, A., 12.
 mass of the isotope O^{17} of, A., 783.
 influence of bromine vapour on mobility of ions in, A., 890.
 electrodeposition of, A., 1136.
 magnetic susceptibility of, at low pressure, A., 788.
 heat of dissociation of, A., 1011, 1370.
 specific heat of, A., 899, 1361.
 triple point of, A., 1221.

Oxygen, critical constants of mixtures of carbon dioxide and, A., 156.
 liquid, containers for, (P.), B., 998.
 viscosity of, A., 32.
 velocity of absorption of, by nitric acid solutions, A., 803.
 desorption of, from platinum as result of ionisation, A., 903.
 velocity of solution of, in water, A., 175, 437, 1016, 1372.
 equilibrium of, with copper and silver, A., 1235.
 with iron and iron carbide, A., 170.
 with iron and hydrogen, A., 41.
 kinetics of reaction of, with acetylene, A., 313, 1133.
 ignition and propagation velocity in mixtures of acetylene and, B., 870.
 combination of carbon monoxide with, at mixed oxide catalysts, A., 576.
 ignition of mixtures of carbon monoxide and, A., 44.
 ignition of dried mixtures of carbon monoxide and, on silica, A., 688.
 flame propagation in mixtures of carbon monoxide and, A., 1014.
 effect of diluents on cathodic combustion of mixtures of carbon monoxide and, A., 44.
 inflammation and detonation of mixtures of carbon monoxide and, A., 436.
 combustion of carbon disulphide in, A., 45.
 radiation of flame from explosion of cyanogen and, A., 313.
 reaction of, with ethylene, A., 1031, 1372.
 combination of hydrogen and, A., 688, 1136, 1244, 1249.
 effect of amount of catalyst on, A., 46.
 on copper catalysts, A., 918.
 effect of iodine on, A., 575.
 thermal combination of hydrogen and, A., 320.
 photosensitised explosion of mixtures of hydrogen and, in presence of chlorine, A., 806, 1137.
 ignition of methane and, A., 1240.
 displacement of explosion limit of phosphine and, by ultra-violet light, A., 47.
 reaction between carbon and, A., 678.
 reactions of, with hydrogen on platinum wire at low temperatures, A., 692.
 with hydrogen sulphide, A., 1239.
 with sodium vapour, A., 1252.
 gas reactions of, A., 809.
 influence of, on pure iron, B., 590.
 recovery of, from air, (P.), B., 1140.
 removal of, from gases, (P.), B., 833.
 from iron alloys, (P.), B., 207.
 from nitrogen, A., 809.
 preparations yielding, on heating, (P.), B., 393.
Oxygen fluorides, A., 810.
Oxygen detection and determination :—
 detection of, in hydrogen, (P.), B., 804.
 active, in fabrics, B., 291.
 determination of, A., 811, 1257.
 in activated carbon, A., 325.
 in gases, B., 19, 756.
 in iron and its alloys, B., 976.
 in oxygen, B., 544.
 during photosynthesis, A., 660.
 in sea and fresh water, A., 538.
 in steel, B., 24.
Oxyhaemoglobin, fractionation of, by cataphoresis, A., 376.
Oxyluciferin, reduction of, by hydrogen, A., 1178.
Oxymethyleneamphors, rotation of, A., 231.
 condensation of, with menthylamines, A., 94.
Oxyns, B., 1145.
10-Oxy-9-oxythionaphthyl-6-oxyphenanthrene, isomer of, and its acetyl derivative, A., 738.
Oysters, rôle of, in setting and metamorphosis of, A., 870.
Ozone, formation and distribution of, in the atmosphere, A., 59, 706, 1136, 1265.
 formation of, at high temperatures, A., 693.
 formation and decomposition of, in the electric discharge, A., 1018, 1139.
 apparatus for production of, (P.), B., 758, 1140.
 portable generator for, (P.), B., 258.
 ultra-violet band spectrum of, A., 1109.
 concentration of, at high temperature, A., 910.
 thermal and photochemical decomposition of, A., 179.

Ozone, decomposition of, by bromine, A., 1130, 1244, 1250.
 action of light on mixtures of chlorine and, A., 1018.
 action of, on aldehydes, A., 604, 1016.
 on nitrogen pentoxide, A., 1239.
 on sulphur dioxide and sulphurous acid, A., 1017.
 explosion of, with hydrogen bromide, A., 1240.
 treatment of animal fibres with, (P.), B., 585.
 toxicity limit of, A., 1086.
 determination of, in atmosphere, A., 55, 814.
 in the lower atmosphere, A., 458.

P.

Packing materials, permeability of, to water and water vapour, B., 340.
Paints, manufacture of, (P.), B., 597, 936.
 colour control in, B., 33.
 mixing of, (P.), B., 49.
 production of drying agents for, (P.), B., 685.
 preparation of precipitated and fused driers for, B., 356.
 "aridyne" as standard unit of drying power of, B., 33.
 measurement of hiding power of, B., 450, 768.
 loss of weight of films of, B., 851.
 "chalking" of films of, B., 32, 169, 259, 552, 895, 1061.
 thixotropy and levelling characteristics of, B., 728.
 viscous and elastic flow of, B., 685.
 viscosity and "brushability" of, B., 596.
 plasticity of, B., 502.
 solubilities of organic constituents of, in methyl borate, B., 983.
 measurement of abrasion resistance of, B., 308.
 use of ethyl silicate and titanate in, B., 675.
 relation between oil content and protective action of, B., 817.
 relations of pigments and oil in, B., 768.
 floating of pigments in, B., 32.
 priming compositions for, (P.), B., 728.
 manufacture of removers for, (P.), B., 127, 170, 1106.
 effect of metallic soaps in, B., 32.
 soap paste for cleaning of, (P.), B., 684.
 thinners for, B., 983.
 camphor white oil as thinner for, B., 851.
 effect of building materials on films of, B., 728.
 influence of structure of wood on behaviour of, B., 403.
 effect of wood grain on durability of, B., 450.
 resistance of, to tackiness, when applied to cedar-lined interiors, B., 33.
 action of ultra-violet light on ageing of, B., 817.
 effects of ageing and weathering on films of, B., 851.
 measurement of colour of, B., 768.
 testing of, B., 33, 552.
 accelerated weathering tests on, B., 125, 260.
 resistant to flue gases, B., 768.
 aluminium stearate in, B., 1061.
 containing glass, decorative painting with, (P.), B., 309.
 cold-water, manufacture of, (P.), B., 642.
 coloured, mixing of, B., 212.
 house, synthetic resins in, B., 33.
 effect of resin in longleaf pine boards on durability of, B., 983.
 effect of thinners on durability of, to indoor exposure, B., 983.
 quick-drying, field tests on, B., 260.
 industrial, proportioning of oil in, B., 817.
 white, B., 125.
 boiled linseed oil, iron oxide, drying process of, B., 851.
 metallic, (P.), B., 170.
 ready-mixed, oil content of, B., 642.
 oil, manufacture of, B., 895.
 properties of, B., 403.
 use of colophony in, B., 895.
 paraffin wax in, (P.), B., 1018.
 failures of, B., 850.
 undercoating for, (P.), B., 388.
 paste, B., 71.
 red lead, setting of, B., 212.
 durable, B., 768.
 resistance, (P.), B., 404.
 rust-preventive, (P.), B., 170.
 as red lead substitutes, B., 403.

- Paints**, water, for cement, etc., (P.), B., 1062*.
 water-resistant, B., 308.
 weather resistant, manufacture of, B., 1061; (P.), B., 72.
 determination of carbon monoxide produced by, B., 1061.
- Paint vehicles**, inorganic, B., 212.
- Painting**, (P.), B., 261.
 binding compositions for, (P.), B., 170.
- Paintings**, oil, panels for, (P.), B., 1090.
- Palladium**, magnetic moment of, A., 1114.
 and its alloys with silver, hydrogen-charged, thermal energy of, A., 899.
 black-body radiation at the m. p. of, A., 1103.
 adsorption of carbon monoxide by, A., 1366.
 pyrognostic assay of, A., 814.
 catalytic, A., 1057; B., 495.
 colloidal, action of hydrogen on, A., 1017.
 oxidised, radiation properties of, A., 780.
 univalent, A., 53.
- Palladium alloys**, (P.), B., 1103.
 for electrical contacts, (P.), B., 548.
 with cobalt, magnetic properties of, A., 155.
 with copper, melting of, (P.), B., 120.
 with copper and silver, (P.), B., 933.
- Palladium bases** (*palladiumamines*), optically active, A., 924.
- Palladium salts**, complex, absorption spectra of, A., 891.
- Palladium trifluoride**, crystal structure of, A., 1359.
- Palladium organic compounds**, A., 1167.
- Palladium detection**:—
 detection of, with dimethylaminobenzylidenerhodanino, A., 590.
- Palms**, Deglet Naor, decline disease in, A., 1201.
 oil, fruit and oil of, B., 210.
 Angola, B., 210.
- Palm oils**, composition of, B., 684.
 α -carotene from, A., 1421.
 Brazilian, B., 894.
- Palmitic acid**, ethyl ester, equilibrium of, with ethyl stearate, A., 684.
- α -Palmitic- γ -stearic acid, glyceryl ester, A., 820.
- α -Palmito- β -y-distearin, A., 820.
- Palmitolinoleo- β -lecithin, A., 1033.
- Palmitolinoleo- α -lecithin bromide, A., 600.
- Palmitolinoleo- β -lecithin, A., 1033.
- Palmitostearins, A., 712, 1199.
- Palmitostearoazelain, A., 712, 1199.
- Paludism, chemotherapy of, A., 871.
- Panax ginseng*, A., 517.
- Pancreas**, action of pain stimuli on secretion of, A., 1452.
 hormone from, A., 397.
 effect of external secretion of, on insulin production, A., 658.
 hypoglycæmia after extirpation of, A., 758.
- Pancreatic extracts**, hydrolysis of proline-polypeptides by, A., 392.
 insulin-free, depressor action of, A., 872.
- Pancreatic juice**, phosphatase in, A., 654.
 proteolytic enzymes of, A., 862, 1082.
 effect of irradiated ergosterol on, A., 1197.
- Pancreatin**, action of, on collagen, A., 654, 1331.
 in presence of lime and ammonium sulphate, B., 732.
 on wool, A., 1456.
- Pantocaine**, A., 872.
- Pantopon**, determination of, in syr. guaiac. co., B., 365.
- Papain**, extraction of, B., 647.
 activation of, A., 124.
 activated by hydrocyanic acid, action of, on caseinogen, A., 392.
 proteolytic action of, A., 521.
- Papaver rhæas*, dye from, A., 738.
- Papaver somniferum*, oil and alkaloids in seeds of, A., 886.
- Papaverinesulphonic acid**, A., 105.
- Papaya**, extraction of papain from, B., 647.
- Paper**, manufacture of, (P.), B., 344, 389, 482, 627, 672, 879, 1090, 1137.
 from chemical pulp, (P.), B., 837.
 flow boxes for, (P.), B., 838.
 maize stems for, B., 241.
 drum-type mill for, (P.), B., 437.
 machines for, (P.), B., 154.
 process water in, B., 387, 625.
 treatment of white water in, B., 138.
 treatment of, to modify light reflection, (P.), B., 59.
 resistance of, to deterioration by light, B., 625.
- Paper**, ageing test for, B., 1089.
 strength testing of, B., 582.
 bursting-strength of, B., 714, 967.
 correlation of bursting strength and tensile strength of, B., 582.
 durability of, B., 714.
 colouring of, B., 582; (P.), B., 534.
 colorimetric examination of, B., 754.
 measurement of gloss of, with step-photometer, B., 241.
 rosin sizing of, B., 1005.
 compositions for coating of, (P.), B., 627, 1045.
 coating minerals and adhesives for, B., 152.
 production of designs on, (P.), B., 583.
 production of pearl effect on surface of, (P.), B., 673.
 photomechanical production of, to show grain of wood, (P.), B., 59.
 stiffening of, (P.), B., 1137.
 uniting surfaces of, (P.), B., 66.
 waterproofing of hard material for, (P.), B., 242.
 compositions of rubber and, (P.), B., 407, 1006.
 polishing material from, (P.), B., 1006.
 products, manufacture of, (P.), B., 389.
 absorbent, (P.), B., 534.
 adhesive, (P.), B., 482.
 asphalt, manufacture of, (P.), B., 288.
 book, permanence of, B., 1089.
 cigarette, manufacture of, (P.), B., 879.
 decolorising and filtering, for oils, etc., (P.), B., 837.
 filter, manufacture of, (P.), B., 627.
 iodine in, A., 329.
 half-stuffs, testing of, B., 1089.
 hard, manufacture of, (P.), B., 627.
 impregnated, production of, (P.), B., 879, 1045.
 insulating. See Insulating paper.
 kraft, production of, from American pines, B., 241.
 linen-surfaced waxed, manufacture of, (P.), B., 673.
 metallised, manufacture of, (P.), B., 347.
 multi-coloured and marbled, production of, (P.), B., 242.
 parchment, production of stock for, from cornstalk pith, (P.), B., 879.
 coloured, production of, (P.), B., 879.
 safety, preparation of, (P.), B., 344.
 sized, waterproof, manufacture of, (P.), B., 969.
 stock, production of, (P.), B., 967.
 toilet, manufacture of, (P.), B., 673.
 transfer, compositions for, (P.), B., 127.
 transparent, manufacture of, (P.), B., 197*, 389.
 waterproof, manufacture of, (P.), B., 242, 1045.
 and its products, (P.), B., 344.
 and greaseproof, production of, (P.), B., 154.
 waxed, determination of moisture-proof properties of, B., 15.
 all-wood, manufacture of, (P.), B., 17.
 determination of acid or alkali in, B., 241.
 determination of α -cellulose content and copper number of, B., 714.
 determination of water in, B., 15.
 determination of mechanical wood pulp in, B., 15.
- Paper board**, manufacture of, (P.), B., 879.
- Paper mills**, slime in, and its prevention, B., 388.
 soda recovery in, B., 582.
 use of waste sulphite material from, for insecticidal sprays, B., 990.
- Paper pulp**, production of, (P.), B., 673, 1090, 1136.
 treatment of, (P.), B., 109.
 beating of, B., 532; (P.), B., 968.
 beaters for, (P.), B., 197.
 drying apparatus for, (P.), B., 94.
 bleaching of, (P.), B., 1137.
 mixtures of emulsified rubber with, (P.), B., 1137.
 bituminous, manufacture of, (P.), B., 389.
 Japanese, B., 1088.
 sulphite, production of, (P.), B., 389.
- Paprika**, colouring matter of, A., 1066, 1158.
- Paprika powder**, colorimetric analysis of, B., 414.
- Parachloral**, dithio-, oxidation of, A., 1071.
- Parachor**, A., 1001.
 and chemical constitution, A., 26, 287.
- Parasodextran**, A., 468.
- Paraffin**, concentration plant for, B., 329.
 hardening of, (P.), B., 193*.
 liquid, protection of volumetric solutions with, A., 185.

- Paraffin**, pyrogenic decomposition of, B., 469.
 oxidation of, electrochemically, A., 460.
 by air, B., 661.
 preparation of higher fatty acids from, A., 821.
 Rangoon, cracking of, B., 524.
 microscopical analysis of, B., 329.
 determination of, in asphalts, B., 100.
- Paraffins**, critical solution temperatures of systems of sulphur dioxide and, B., 470.
 thermal decomposition of, A., 1131.
 oxidation of, catalytically, A., 1391.
 of high molecular weight, preparation of, A., 193.
- Paraffin emulsions**. See under Emulsions.
- Paraffin oil**. See Paraffin.
- Paraffin products**, refractometric analysis of, B., 708.
- Paraffin wax**, X-ray structure of, A., 152.
 determination of softening point of, B., 871.
 crystallisation of, B., 329.
 recovery of, from oils, (P.), B., 1039.
 sweating of, B., 101.
 treatment of immersion baths of, to diminish development of acidity, (P.), B., 104.
 formation of fatty acids in oxidation of, B., 284.
 bleaching and deodorisation of oxidation products of, (P.), B., 54.
 fractionated, X-ray structure of, A., 897.
- Paragutta** for submarine cables, B., 309.
- Paraldehyde**, cryoscopy of, in barium and sodium chloride solutions, A., 35.
 in calcium and strontium chloride solutions, A., 430.
 in lithium and magnesium chlorides, A., 910.
- Paraldol**, manufacture of α -butylene glycol from, (P.), B., 237.
- Paralysis**, caused by ginger, B., 135.
- Paramagnetism** of salts under influence of light, A., 670.
- Paramacia**, effect of ultra-violet light on, A., 986.
 effect of iron and of cyanides on respiration of, A., 1333.
 action of quinoline compounds on, A., 651.
- Paramacium caudatum**, influence of hydrogen sulphide on reproduction of, A., 264.
- "Parathormone"**, administration of, to guinea pigs, A., 114.
- Parathyroids**, physiology of, A., 978.
 effect of administration of, on body-calcium and -phosphorus, A., 268.
 effect of hormone from, on blood-calcium, A., 268.
 bovine, hormone from, A., 127.
- Parchment**, vegetable, analysis of, B., 479.
- Parisite**, crystal structure of, A., 1218.
- Parotid glands**, goat's, secretory nerve apparatus of, A., 757.
 human, tryptic enzyme in secretion of, A., 862.
- Particles**, size of, and chemical activity, A., 796.
 determination of, A., 796; B., 950.
 polarisation of Tyndall beam for, A., 164.
 in emulsions, A., 302.
 relation between, and phase boundary potential, surface tension, and adsorption, A., 300.
 collision of, A., 1109, 1349.
 separation of, from free water, (P.), B., 424.
 microscopic, bulking properties of, B., 47.
 adherence and packing of, A., 36.
 small, measurement of size of, B., 825.
 suspended, electric charging of, A., 1350.
 cataphoresis of, A., 1232.
- α -Particles**, structure of, A., 783.
 valve method of recording, A., 666.
 scattering of, by helium, A., 280.
 by light atoms, A., 407.
 anomalous scattering of, by light nuclei, A., 280.
 capture of electrons by, A., 280.
 superposition of electron charges in, A., 666.
 artificial disintegration by, A., 783.
- β -Particles**, loss of energy by, A., 281.
- H-Particles**, scattering of, in hydrogen, A., 889.
 from disintegration of aluminium, A., 279.
- Passivity**, topochemistry of, A., 1374.
 of metals, A., 46.
- Pasteboard**, manufacture of, from wood pulp, (P.), B., 922.
- Pasteurisation**, (P.), B., 1153, 1164.
- Pastry**, production and sterile packing of, (P.), B., 564.
 calculation of egg content of, B., 739.
- Pastures**, composition of grass from fertilised and grazed plots of, B., 132.
- Pastures**, seasonal variations of composition of, under various manurial treatments, B., 646.
 mineral content of, B., 741.
 nutritive value of, B., 83, 646.
 relation of ash constituents of plants of, to nutrients, B., 175.
 effect of nitrogen fertilisers on, B., 690, 1022.
 in dairy farming, B., 1149.
 South Australian, mineral content of, B., 1068.
 influence of frequency of cutting on, B., 558.
 at Waranama Ranch, Berbee River, B., 82.
- Patinopecten yossensis***, properties of oils of, B., 552.
- Patrisia acuminata***, constituents of, A., 401.
- Paving compositions**, bituminous, manufacture of, B., 1051; (P.), B., 66.
 cold, (P.), B., 590.
- Paving materials**, production of, (P.), B., 160.
- Peas**, factors influencing yield and quality of, B., 216.
 consumption of alcohol during respiration of, A., 1197.
 Austrian winter, effect of, on soils, B., 1112.
 canning, quality of, B., 1119.
 germinating, production of α -hydroxyglutaric acid by, A., 873.
 picked and shelled, changes in composition of, A., 883.
- Pea seeds**, treatment of, with mercury dusts, B., 458.
- Peaches**, development and ripening of, A., 272.
 preservation of, by freezing, B., 272.
 Clingstone, rust on, B., 605.
- Peach borer**, lesser, control of, with *p*-dichlorobenzene solutions, B., 990.
- Pea-meal**, oxygen uptake and carbon dioxide output of, A., 130.
- Peanuts**, vitamin-B in, A., 659.
 Chinese. See *Arachis hypogaea*.
- Peanut oil**, isolation of higher saturated acids of, A., 822.
 Philippine, composition of, B., 1105.
- Pears**, energy value of, in storage, A., 883.
 control of *Botrytis* rot of, B., 1112.
 Bartlett, seasonal changes in shoots of, A., 1197.
 nitrogen in shoots of, A., 990.
 prickly. See Prickly pear.
- Pearlite**, structure and mechanical properties of, A., 289; B., 1097.
- Peat**, origin of, A., 596.
 microbiology of formation of, B., 184.
 sorptive properties of, B., 174.
 sorption of water vapour by, B., 97.
 bacterial decomposition of, A., 265.
 acid-base balance of, A., 1340.
 manufacture of absorbent materials from, (P.), B., 471.
 treatment of, for use in insulation, (P.), B., 249.
 manures of, B., 605.
 utilisation of, in manures in Russia, B., 691.
 production of raw material for artificial silk from, (P.), B., 109.
 American, physical and chemical properties of, A., 192.
 raw, mechanical dehydration of, (P.), B., 329.
 determination of total acid in, B., 5.
- Peat briquettes**. See under Briquettes.
- Pectase**, rôle of, in fermentation of coffee, A., 1331.
 decomposition of methyl hydrogen *d*-tartrate by, A., 392.
- Pecten maximus***, optimum pH and temperature of style enzyme of, A., 765.
- Pectic acids**, calcium salts, decarboxylation of, A., 824.
- Pectin**, extraction of, B., 220; (P.), B., 741.
 from apple pomace, (P.), B., 1073.
 purification of, (P.), B., 653.
 production of jellies from, A., 683; B., 610.
 decarboxylation of, A., 824.
 from *Citrus limetta*, B., 860.
 citrus, in solid form, B., 741.
 jelly test for solutions of, B., 220.
 determination of, B., 513.
- Pectography**, A., 564.
- Peganum harmala***, preparation of haruine from, A., 1100.
- Pegmatites**, classification of, A., 459.
- Pehamer**, use of, A., 699.
- Pelargonidin chloride**, synthesis of β -glucosides of, A., 1423.
- Pellagra**, pathological physiology of, A., 1324.
- Pelts**. See Skins.
- Peltier effect**, measurement of, at tungsten-molybdenum junctions A., 44.
- Pemphigus xylostei***. See Wood louse.

- Pencil leads, manufacture of, (P.), B., 170.
Penicilliosis, colouring matter of, A., 1092.
Penicillium, action of p_{H} and of sodium carbonate on species of, A., 769.
 fermentation by, A., 1092.
 invertase of, deprived of calcium, manganese and phosphate, A., 876.
Penicillium glaucum, formation of enzymes in cultures of, A., 985.
 invertase of mycelium of, A., 876.
Penicillium roqueforti, effect of ammonium salts on growth of, in cheese, A., 394.
 esterase and protease of, A., 264.
Pennisetum typhoidum, protein of, A., 503.
 Penta-acetylmannononitrile, A., 467.
 Penta-acetyl- β -methylglucoside, A., 1275.
 Pentacene series, linear, A., 209, 489.
 Pentacene-6:13-quinone, 5:7:12:14-tetrahydroxy-, and its tetra-acetate, A., 1292.
n-Pentacontane, A., 193.
*cyclo*Pentadecanone dinitrophenyl hydrazone, A., 937.
 2-*n*-Pentadecylbenzimidazole, A., 601.
 Pentadecylcyclohexane, A., 841.
 $\Delta\alpha$ -Pentadiene, synthesis of, and its tetrabromide, A., 194.
*cyclo*Pentadiene, polymers of, A., 473.
 $\Delta\alpha\gamma$ -Pentadiene- $\alpha\delta$ -diol, $\alpha\gamma$ -dinitro-, acetate of, A., 95.
c-Pentadienylidene-1:3-diketohydrindene, A., 1293.
c-Pentadienylidencine, A., 1293.
 Pentaerythritol, structure of, and its salts and ethers, A., 195.
 purification and polymorphic transformation of, A., 334.
 reaction of, with aldehydes, in presence of zinc chloride, A., 1393.
 ethers, manufacture of, (P.), B., 621.
 tetranitrate, brisance of, B., 225.
 stability of hexogen and, B., 1123.
 explosive properties of mixtures of glycerol trinitrate and, B., 907.
 determination of, B., 751.
 Pentakis- $\alpha\alpha'$ -dipyridyldiargentic persulphate, A., 234.
 2:4:5:3':4'-Pentamethylbenzophenone, A., 1282.
 1:3:5:6:7-Pentamethyl-2:4-diethylporphin-8-propionic acid, and its methyl ester, A., 496.
s-Pentamethylenedi-*p*-bromophenyl sulphide, A., 1409.
s-Pentamethylenedi-*p*-bromophenylsulphone, A., 1409.
 Pentamethylene- $\alpha\epsilon$ -di-*p*-thiocarbamide dihydrochloride, A., 1043.
 Pentamethylethanol, preparation of, A., 461.
 $\beta\beta\gamma\zeta$ -Pentamethylheptan- γ -ol-one, and its derivatives, A., 461.
 Pentamethylphenol, derivatives of, A., 950.
 1:2:2:5:5-Pentamethyltetrahydroprazine chloroplatinate, A., 367.
 Pentane, preparation of, A., 819.
 refraction of, A., 1355.
 adsorption of, by powdered glass and silver, A., 419.
 halogen derivatives, dipole moments of, A., 669.
 Pentane, *di*- and *tetra*-bromo-, A., 1147.
l-Pentane, β -bromo-, A., 821.
 Pentanes, decomposition temperatures of, A., 596, 1147.
 oxidation of in air, A., 1371.
 α - and β -Pentanes, $\beta\delta$ -diamino-, and their salts and derivatives, A., 829.
*cyclo*Pentane nucleus, attachment of carboxylated side-chains to, A., 957.
*cyclo*Pentanespirocyclobutane-2':2':4':4'-tetracarboxylic acid, A., 1415.
*cyclo*Pentanespiro-2':4'-dicyanocyclobutane-2':4'-dicarboxylimide, A., 1415.
*cyclo*Pentanespiro-2':4'-dicyano-2'-carbamylicyclobutane-4'-carboxylic acid, A., 1415.
*cyclo*Pentanedione-1(2')-spiro-transhexahydrohydrindenes, and their disemicarbazone, A., 728.
 Pentanetetracarboxylic acids, and their ethyl esters, A., 603.
 Pentane- $\alpha\epsilon\epsilon$ -tricarboxylic acid, methyl ester, A., 1392.
 Pentane- $\alpha\delta\epsilon$ -triol, and its triphenylurethane, A., 933.
 Pentanol, $\delta\epsilon$ -dibromo-, A., 933.
*cyclo*Pentanone naphthylhydrazones, A., 366.
 Pentaphenylchromium hydroxide, hydrates of, A., 1236.
 Pentaphenyl-1:4-dihydrobenzenes, bromo- and chloro-*di*hydroxy- and *tri*hydroxy-, A., 1062.
 1:2:3:4:5-Pentaphenyldihydroglyoxaline, and its salts, A., 496.
 $\alpha\alpha\beta\gamma\gamma$ -Pentaphenylpropane, $\alpha\beta$ -*di*hydroxy-, A., 354.
 $\alpha\alpha\beta\beta\beta$ -Pentaphenylpropionic acid, derivatives of, A., 955.
 Pentaphenylisopropyl alcohol, A., 956.
 Pentaphenylpyridine, reduction product of, A., 1431.
Pentaspadon molleyi, exudation from wood of, A., 88.
 $\Delta\alpha$ -Pental, and its derivatives, A., 1273.
 Pentene derivatives, A., 1392.
 $\Delta\alpha$ -Pentene, addition of hydrogen halides to, A., 1391.
 $\Delta\beta$ -Pentene, electromerides of, A., 597.
 density and surface tension of isomerides of, A., 1358.
 autoxidation of, A., 1147.
 $\Delta\delta$ -Pentene, $\alpha\delta$ -dibromo-, A., 1392.
 Pentenes, decomposition temperatures of, A., 596, 1147.
 autoxidation of, A., 61.
 Pentenes, bromo-, A., 1147.
*cyclo*Penteno-1:2-benzanthracenes, and their salts and derivatives, A., 612, 1407, 1420.
 5:6-*cyclo*Penteno-1:2-benzanthrene picrate, A., 1407.
 Δ^a -Pentenoic acid, γ -chloro- δ -hydroxy-, A., 1148.
 $\Delta\delta$ -Pentanol, derivatives of, A., 933.
 $\Delta\delta$ -Pentenyl alcohol, δ -bromo-, A., 1392.
 $\Delta\delta$ -Pentenyl bromide and chloride, A., 1392.
 Penthrinite, B., 136.
 frozen and plastic, high brisance of, B., 368.
 $\Delta\beta$ -Pentinencarboxylic acid, A., 1271.
 Pentosans, utilisation of, in the organism, A., 1086.
 in Russian tobaccos, B., 653.
 determination of, A., 1198; B., 341.
 in plant tissues, A., 885.
 in pulps, B., 387.
 Pentosuria, nature of sugar in, A., 254.
 in children, A., 865.
 Peony seed oil, A., 1101.
 Pepper, red, Japan, pigment from, A., 847, 1158.
 Peppermint oil, Japanese, B., 514.
 hydrocarbons in, B., 697.
 detection of, by Rosenthaler's reaction, B., 611.
 Pepsin, A., 766.
 gelatin-liquefying enzyme in preparations of, A., 1331.
 refractive index of solutions of, A., 520.
 measurement of activity of, A., 766, 874.
 concentration of, and chemistry of its action, A., 124.
 action of, on amino-acids, A., 1090.
 in cold- and warm-blooded animals, A., 393.
 crystalline, A., 984, 1090.
 examination of, A., 1090.
 evaluation of preparations of, A., 766.
 assay of, A., 1456.
 determination of, A., 124.
 Peptidases, action of, A., 520.
 of green malt, A., 655.
 Peptides, action of alkali on, A., 1430.
 combination of, with acid and alkali, A., 204.
 simple, determination of dissociation of, electrometrically, A., 168.
 Peptide substances, A., 470, 1310.
 Peptone, action of, on gastric secretion, A., 509.
 iodination of, A., 503.
 triketohydrindene as reagent for, A., 972.
 commercial, bacteriostatic action of components of, A., 396.
 Peracetic acid, oxidation of organic compounds with, A., 1150, 1290.
 Per-acids, nature of, A., 149, 1114.
 Peractivin, B., 390.
 Perbenzoic acid, oxidation of organic compounds with, A., 1150, 1290.
 Perchlorates and Perchloric acid. See under Chlorine.
 Peregrine oxide, A., 1314.
 Pereiro bark, alkaloids of, A., 1313.
 Perfumes, manufacture of, (P.), B., 710, 742.
 adsorption of, for preparation of odorous materials, (P.), B., 782.
 examination of, using an analytical quartz lamp, B., 696, 905.
 Perhydroazafirin, and its methyl ester, A., 492.
 Perhydrobenzidine, and its salts, A., 613.
 Perhydroboxin, electrolysis derivatives of, A., 1267.
 Perhydrocrocin, A., 1067.
 Perhydrocyclopene, structure of, A., 597.
 Perhydroviolaxanthin, A., 492.
 Perilla oil, B., 31.
 Periodates and Periodic acid. See under Iodine.
 Periodic system of elements, A., 890.
 distribution of crystal types in, A., 150.
 graphical arrangement of, A., 15.

- Periodicity, A., 563, 1031.
law of, A., 833.
- Periplogenin, correlation of, with digitoxigenin, A., 1297.
with strophanthidin, A., 827.
- α -isoPeriplogonic acid, methyl ester, A., 827.
- Peritonitis, bile, chemical changes in blood in, A., 1324.
- Perkin's synthesis, A., 1413.
- Permalloy, heat-treatment of, (P.), B., 207.
air-cooled, permeability of, A., 790.
- Permanganates. See under Manganese.
- Permeability of cells, A., 862.
influence of surface-active substances on, A., 1125.
of tissues in the organism, A., 117.
and vital staining, A., 649.
- Perminvar, magnetic properties of, B., 844.
- Permutites, ionic exchange in, A., 163, 685.
relation between nature of anions and base-exchange in, A., 163.
- Peronine, manufacture of easily soluble salts of, (P.), B., 612.
- Perosis, rice bran as preventive of, A., 1181.
- Peroxidase, nature of, A., 1455.
production of, by bacteria, A., 395.
from vegetable substances, (P.), B., 133.
activity of, A., 873.
of iron compounds, A., 439.
kinetics of action of, A., 983.
production of quinoneimide dyes by means of, A., 390.
heat-inactivated, regeneration of, A., 1089.
of milk, A., 509, 772.
determination of, A., 390, 1455.
- Peroxidase reaction, A., 862.
- Peroxides, organic, bactericidal efficiency of, A., 1336.
grinding of, (P.), B., 1086.
- Per-salts, manufacture of, by anodic oxidation, (P.), B., 122.
- Persimmons, Japanese, effect of ethylene on composition and respiration of, A., 774.
grown in Florida, constituents of, A., 401.
- Persipan products, determination of fat in, B., 859.
determination of sucrose and dextrose in, polarimetrically, B., 859.
- Persulphates. See under Sulphur.
- Perylene, and its derivatives, A., 730, 1045.
Perylene, 4:10-diamino-, manufacture of, (P.), B., 105.
Perylene dyes, vat, manufacture of, (P.), B., 798, 1004.
3:10-Perylenequinol, dibromo-, A., 1065.
Perylenequinone, molecular compounds of, A., 1045.
1:12-Perylenequinone, manufacture of green vat dyo from, (P.), B., 152*.
- 3:10-Perylenequinone, dibromo-, action of sodium sulphide on, A., 1064.
- Pests, destruction of, with alkyleneoxides, (P.), B., 226.
animal or insect, manufacture of agents for destroying, (P.), B., 744.
- Petalite, structural and molecular unit of, A., 289.
- Petitgrain oil from Tanganyika, B., 45.
- Petri dishes, cellophane covers for, A., 1027.
- Petrol, production of, by carbonisation of solid fuel, (P.), B., 9.
filter for, in pumps, (P.), B., 11.
treatment of, (P.), B., 473.
refining of, (P.), B., 55.
strainers for, (P.), B., 424.
of high benzene value, B., 284.
See also Gasoline.
- Petrolatum, preparation of, (P.), B., 193*.
white, manufacture of, (P.), B., 1002.
- Petroleum, origin of, A., 332.
hydrogen sulphide in relation to formation of, A., 460.
synthesis of, B., 230.
utilisation of exit gases from, B., 231.
influence of sulphur in, B., 230.
recovery of, from residues, (P.), B., 961.
constituents of, A., 1396 ; B., 957.
relation between, and plant resins, B., 52.
phytosterols and abietic acid as parents of optically active components of, A., 1299.
refining of, (P.), B., 147, 962, 1038, 1081.
regeneration of litharge in, B., 468.
treatment of sulphuric acid materials from, (P.), B., 529.
treatment of waste products from, (P.), B., 55.
recovery of waste clay from, (P.), B., 665.
removal of sulphur from, (P.), B., 1038.
- Petroleum, decolorisation of, with acid clays, B., 232, 375.
treatment of, (P.), B., 916.
alkaline treatment of vapour of, (P.), B., 795.
distillation of, B., 748 ; (P.), B., 471.
distillates, constituents of, B., 661.
colouring of, (P.), B., 1084.
decolorisation of, (P.), B., 709.
decolorisation and deodorisation of, (P.), B., 749.
fractionation of, (P.), B., 145.
chemistry of "doctor" sweetening process for, B., 792.
conversion of residues from sweetening of, (P.), B., 1038.
nitrogen compounds of, A., 631.
desulphurisation of, with silica gel, B., 524.
production of resins from, (P.), B., 261.
liquid, (P.), B., 577.
steam rectification of products of, B., 284.
and α -rays, A., 818.
and its products, dielectric constants of, B., 618.
photographic determination of detonating tendency of, B., 830.
production of colour lakes from, (P.), B., 686.
isolation of hexanes from, B., 187.
phenols of, B., 7.
separation of sludge from residues of, (P.), B., 332.
catalytic reactions of sulphur compounds in, B., 327.
Cabin Creek, lubricating fractions of, B., 524.
from Chusovskikh Gorodkov, B., 142.
cracked, refining of, B., 707.
crude, stabilisation of, (P.), B., 147.
metallic constituents of, B., 1081.
Japanese, origin and formation of, A., 708.
constituents of, B., 1033.
properties and compositions of fractions of, B., 957, 1034, 1081.
determination of aromatic hydrocarbons in, B., 1081.
Maikop, corrosion by naphthenic acids in, B., 284.
Oklahoma, benzene and n -hexano in, B., 748.
cyclohexane in, B., 1081.
determination of toluene in, B., 660.
vapour, determination of, in air, B., 1035.
determination of reducible substances and adsorbable matter in, B., 618.
apparatus for determination of sulphur in, B., 792.
- Petroleum beds, salt water of, A., 1145.
- Petroleum emulsions. See under Emulsions.
- Petroleum hydrocarbons. See under Hydrocarbons.
- Petroleum oils, purification of, (P.), B., 916.
removal of wax from, (P.), B., 916, 961, 1039.
treatment of, (P.), B., 104, 381, 472, 873.
lye treatment of, (P.), B., 383.
cracking of, (P.), B., 235, 471, 472, 529, 619, 750, 795, 914, 1037, 1084.
distillation of, (P.), B., 664.
entrainment separators for vacuum distillation of, (P.), B., 915.
hydrogenation of, B., 468.
coking of, (P.), B., 383.
conversion of, (P.), B., 192, 795, 1131.
total heat and specific heat of fractions of, B., 143, 1034.
compressibility and thermal expansion of, B., 52.
heavy, conversion of, into lubricating oils, (P.), B., 832.
containing sulphur, treatment of, (P.), B., 873.
- Petroleum products, destructive hydrogenation of, (P.), B., 709.
treatment of, (P.), B., 1131.
determination of carbon residue from, B., 375.
- Petroleum springs, radium in, A., 1145.
- Petroleum wax, composition and crystal form of, B., 708.
- Petromyzontidae*. See Lampreys.
- Peucedanin, constitution of, A., 1298.
- Phæohæmin b, A., 1099.
- Phæophorbide α , formation of phylocrythrin from, A., 102.
- Phæophorbide- b -iron, A., 661.
- Phæophyceæ, liberation of iodine from iodides by, A., 132.
- Phæophytin α , iron compound, A., 1169.
- Phæoporphyrins, and their derivatives, A., 744.
- Phæoporphyrins α , and their derivatives, A., 1432.
- Pharmaceutical preparations, determination of *p*-chlorophenol in, B., 318.
determination of formaldehyde in, B., 1073.
determination of iron in, colorimetrically, B., 908.
determination of phenolphthalein in, B., 945.
products, determination of hexamethylenetetramine in, B., 653.

- Pharmacology, potential effects in, A., 388.
Phaseolus aureus (mung bean), biological value of proteins of, A., 118.
 growing, changes in phosphorus content of, A., 400.
Phaseolus vulgaris. See Beans, French.
 α -Phellandrenes, synthesis of, A., 230.
Phellodendron japonicum, essential oil from fruit of, B., 905.
 Phellogenic acid, A., 1036.
 Phellonic acid, and its acetyl derivative, A., 713.
 Phenacetin, preparation of 2-chloro-3-nitrophenol from, and 2-chloro-3-nitro-, A., 614.
 bases formed by action of phosphoryl chloride on acetanilide and, A., 1429.
 hydrochloride, A., 952.
 Phenaceturic acid in urine of domestic animals, A., 1450.
 Phenacyl alcohol, *p*-nitro-, phenylhydrazon-, A., 1418.
 Phenacyl dibromide and mercaptan, A., 1419.
 Phenacylcarbinol, A., 206.
 Phenacylmethylethylsulphonium cadmi-*tetra*- and -*penta*-iodides, and mercuri-*tri*- and -*tetra*-iodides, A., 106.
 2-Phenacylthiolanthraquinone, 1-amino-, and its thiazine derivative, A., 748.
 Phenanthra-acenaphthene, A., 612.
 2':3'-Phenanthra-1:2-anthracene, A., 612.
 2:3-Phenanthrafluorene, A., 612.
 2':3'-Phenanthra-2:3-phenanthrenes, A., 612.
 Phenanthraquinone, action of, with 1-phenylcarbohydrazide, A., 475.
 condensation products of, with resorcinol, and their derivatives, A., 627.
 oxime, condensation product of, with thiohydantoin, A., 495.
 Phenanthrazinephenazine, A., 744.
 Phenanthrene, structure of, A., 27, 1351.
 purification of, A., 81.
 optical properties of, A., 1355.
 molecular compound of phenyliododifluoride and, A., 611.
 mercurichloride, A., 1435.
 detection of, colorimetrically, A., 375.
 Phenanthrene-1:7-dicarboxylic acid, methyl ester, A., 360.
 Phenanthrene-9:10-dicarboxylic anhydride-1:3-dicarboxylic acid, and its dimethyl ester, A., 730.
 9:10-Phenanthrenediphthalamic acid, and its sodium salt, A., 744.
 Phenanthrene-1:8:9:10-tetracarboxylic acid, derivatives of, A., 730.
 Phenanthridine, synthesis of homologues and derivatives of, A., 1308.
 Phenanthripyridine alkaloids, absorption spectra of, A., 1434.
 9:10-Phenanthrylenebisphthalimide, A., 744.
 Phenarsazine chloride, constitution of, A., 372.
 derivatives, A., 1435.
 Phenarsazinic acid, *di*- and *tri*-chloro-, A., 501.
 Phenazine, structure of, A., 1351.
 Phenazine, α -hydroxy-, formation of semiquinone as intermediary reduction product of, A., 1309.
 9:10-Phenazine-2:3-azimino-*C*-phenyl-*o*-carboxylic acid, A., 744.
p-Phenetidine, *p*-toluenesulphonyl derivative, A., 81.
p-Phenetidine, 3-chloro-2-nitro-, A., 614.
 4-*p*-Phenetidino-6-ethoxy-2-methylquinoline, and its hydrochloride, A., 1429.
 Phenetole, 2:4-diamino-, dibenzoyl derivative, A., 837.
 2-chloro-4-iodo-, and *p*-iodo-, iododichloride of, A., 837.
 5-chloro-3-nitro-, A., 614.
o-nitroso-, A., 1284.
p-thiocyano-, and its *mono*- and *di*-nitro-derivatives, A., 474.
 by-products from preparation of, A., 722.
 Phenetoleazoxybenzoic acid, allyl ester, X-ray structure of, A., 897.
p-Phenetolecarbamide, reactions of, A., 1174.
 Phenetole-3-thioglycolic-4-glyoxylic acid, A., 1163.
 1-*p*-Phenetylaminoethylthiobromine, A., 239.
 Phenol, recovery of, from gas liquors, B., 429.
 influence of substitution on colloid-chemical and disinfective properties of, A., 396.
 adsorption of, by charcoal, A., 903.
 mixtures of, with water, A., 1225; B., 273.
 physical properties of mixtures of benzene, water, and, A., 555.
 hydrogenation of, A., 1286; B., 1085.
 over nickel, A., 693.
 nitration of, A., 614.
 action of, on benzoyldiphenylmethyl bromide, A., 622.
 Phenol, action of, with ethylene oxide, A., 477.
 action of ferric chloride on acyl esters of, A., 83.
 preparation of coumarins and 1:4-pyrones from, A., 1303.
 condensation products of formaldehyde and, B., 817; (P.), B., 357.
 sulphurised compounds of, as mordants, (P.), B., 293*.
 removal of, from coal-tar distillery water, B., 996.
 physiology of, A., 1328.
 oxidation and combination of benzene and, in the organism, A., 1183.
 3:5-dinitrobenzoyl derivative, A., 837.
 determination of, B., 327.
 gravimetrically, by Lautemann's red, A., 1438.
 in ammoniacal and waste liquors, B., 283.
 in tar, B., 574.
 Phenol, *o*-amino-, acyl derivatives of, A., 615.
 butyryl derivative, A., 615.
 2:4-diamino-, preparation of, catalytically, A., 346.
m-bromo- and *m*-chloro-*o*-amino-, benzoyl derivatives, A., 615.
 6-bromo-4-iodo-2-nitro-, A., 1284.
p-chloro-, determination of, in pharmaceutical preparations, B., 318.
 2-chloroamino-, acetyl derivative, A., 747.
 3-chloro-4-amino-, acetate of acetyl derivative, and 3-chloro-4-nitro-, A., 341.
 4-chloro-2-aminothio-, reactions of, and its derivatives, A., 348.
 2-chloro-5-bromo- and -5-iodo-, A., 79.
 2:5-dichloro-*di*- and *tri*-bromo-, 2:4:5-trichloro-*mono*- and *di*-bromo-, and 2:4:5-trichloro-6-nitro-, A., 836.
 2-chloro-5-hydroxyamino-, A., 1314.
 2-chloro-3-nitro-, preparation of, from phenacetin, and 2-chloro-3-nitro-*p*-amino-, A., 614.
 3-chloro-4-nitroso-, constitution of, and its derivatives, A., 952, 1152.
 2:5-dichlorothio-, and its lead salt, A., 1283.
o-iodo-, chlorination of, and its derivatives, and *mono*-, *di*-, and *tri*-chloroiodo-, and 4-chloro-2:6-diiodo-, and their derivatives, A., 345.
p-nitro-, preparation of, from *p*-chloronitrobenzene, A., 212.
 2:4-dinitro-, piperidine and pyridine salts, A., 629.
 determination of, A., 1318.
 Phenols, formation of, from sugars, A., 605.
 production of, (P.), B., 150*.
 extraction of, from alkaline solution, with ether, A., 100.
 from phenolic tar oils, (P.), B., 288, 1037.
 thermal behaviour of, A., 577.
 catalytic hydrogenation of, B., 194.
 destructive hydrogenation of, (P.), B., 709.
 nitrosation of, A., 952, 1153.
 luminescence in oxidation of, A., 1354.
 catalysis of oxidation of, by bacteria, A., 265.
 reduction of, (P.), B., 917.
 addition of, to the ethylene linking, A., 346, 1288.
 and their derivatives, reaction of, with acetic anhydride-acetic acid-sulphuric acid, A., 1289.
 condensation of, with aldehydes, A., 493, 1153.
 with α -formylphenylacetoneitriles, A., 963.
 and their ethers, with acetonedicarboxylic acid, A., 1055.
 action of, with arsinoacetic acid, A., 297.
 with bromine, A., 477.
 with chlorosulphonic acid, A., 83.
 with trichloromethyl chloroformate, A., 212.
 synthesis of coumarins from, A., 1304.
 β -glucosides, preparation of, A., 201.
 sodium derivatives, action of α -dichloropropylene on, A., 952.
 manufacture of condensation products of indene and, (P.), B., 918.
 antitoxic properties of, A., 1193.
 from coal tar, A., 1286.
 of brown-coal tar, B., 100.
 of petroleum, B., 7.
 alkylated, production of, (P.), B., 150*.
 production of hydrogenation products of, (P.), B., 150*.
 nuclear, manufacture of, (P.), B., 335.
 cyclic, and polyphenols, differentiation of, A., 375.
 dihydric, bactericidal properties of ethers of, A., 1289.
 identification of, A., 345.
 as esters of 3:5-dinitrobenzoic acid, A., 837.

- Phenols, detection of, colorimetrically, A., 972.
determination of, colorimetrically, in urino, A., 1322.
in aqueous solution, by bromine method, A., 1438.
in ammoniacal and spent liquors from gas works, etc., B., 706.
in water, B., 706.
- Phenols, amino-, and their acetyl derivatives, bromination of, and their bromo-derivatives, A., 725.
o-amino-, alkyl- and aryl-sulphonyl derivatives of, A., 1288.
di- and *tri*-amino-, *mono*- and *di*-bromodiamino-, *mono*- and *di*-bromo-*mono*- and *di*-nitroamino-, and *mono*-, *di*-, and *tri*-nitroamino-, and their salts and derivatives, A., 477.
o-aminothio-, manufacture of, (P.), B., 239*.
condensation of aldehydes with, A., 1075.
amino- and hydroxy-thio-, A., 1289.
bromo-, A., 836.
replacement of bromine by nitro-group in, A., 1287.
4-bromo-2-iodo- and 6-chloro-2,4-*di*iodo-, and their derivatives, A., 837.
*di*bromodinitro-, *dichlorodibromo*-, and 3-chlorodibromo-amino-, -iodo-, and -nitro-, A., 1287.
polychloro-, A., 345.
chloro-amino- and -nitro-, preparation of, A., 952.
halogenated, rate of reaction of, with acetyl bromide, A., 1410.
o-*di*hydroxy-, detection of, colorimetrically, A., 856.
iodo-, chlorination of, A., 345, 837.
nitro-, halogenated, A., 614.
p-nitro- and *p*-nitroso-, catalytic reduction of mixtures of, with aldehydes and ketones, A., 837, 1047.
*di*nitro-, formation of, A., 952.
nitroamino-, reaction of, with sulphonyl chlorides, A., 1287.
mono- and *di*-nitroamino-, and their naphthoates and *p*-toluenesulphonates and their derivatives, A., 1287.
thio-, A., 233.
non-dyeing, manufacture of, (P.), B., 335.
- Phenol ethers, A., 479.
decomposition of, by concentrated hydrochloric acid, A., 1416.
dealkylation of, by pyridine and piperidine, A., 838.
- Phenol red, chloro-, preparation of, A., 89.
- Phenolarsinic acids, amino-, acyl derivatives, manufacture of soluble sodium salts of, (P.), B., 463.
o-amino-, formation of, from amino-1-methylbenzoxazoles, A., 241.
- "Phenolates," B., 620.
- Phenoltetrabromosulphonaphthalein, and its tetrabromo-derivative, A., 221.
- Phenolcarboxylic acids, manufacture of substitution products of, (P.), B., 711.
- Phenolindophenol, *o*-chloro-, absorption spectrum of, A., 784.
- Phenoltetraiodosulphonaphthalein, and its derivatives, A., 221.
- Phenol-lignins, acetyl derivatives of, A., 942.
- Phenol-3-nitrophthalein, A., 841.
- Phenolphthalein, production of, finely-divided, (P.), B., 1086.
determination of, in pharmaceutical mineral oil emulsions, B., 945.
- Phenolphthalein, tetraiodo-, sodium derivative, absorption of, by the gall bladder, A., 1452.
determination of, in duodenal fluid, A., 1179.
- Phenolsulphonaphthalein, elimination of, by the kidneys, A., 1446.
- Phenol-2-sulphonic acid, 5-chloro-, A., 1283.
- Phenol-4-sulphonic acid, 2-aminothio-, A., 84.
- Phenol-6-sulphonic acid, 3,4-*dichloro*-, A., 79.
- Phenonaphthosafraanine dyes, acid, manufacture of, (P.), B., 59.
- Phenoxides, and *mono*- and *di*-nitro-, and thio-, phenyl alkyl- and aryl-ammonium and arsonium, A., 834.
- Phenoxyacetic acid, *o*-amino-, potassium salt, A., 747.
- Phenoxyacetic acids, halogeno-, A., 345.
- ω -Phenoxyacetophenone, *o*'-iodo-, and its iodo*di*chloride, A., 345.
p-iodo-, iodo*di*chloride of, A., 837.
- Phenoxybenzaldehydes, 4-nitro-, A., 731.
- Phenoxybenzoic acid, 4-*p*-amino-, and 4-*p*-nitro-, and their derivatives, A., 731.
- Phenoxybenzophenone, 2-*o*-hydroxy-, A., 1305.
- o*-4'-Phenoxybenzoylbenzoic acid, A., 225.
- o*-4'-Phenoxybenzylbenzoic acid, A., 225.
- γ -Phenoxybutyr- δ -phenoxybutylamide, A., 620.
- 4'-Phenoxydiphenyl ether, *mono*- and *di*-amino-, 4-hydroxy-, 4-nitro-, and nitroamino-, and their derivatives, A., 479.
- β -Phenoxydiphenylene-ethylene, β -chloro-, A., 85.
- β -Phenoxy-*aa*-diphenylethylene, β -chloro-, sulphide, A., 964.
 β -chloro- β -2,4:6-trichloro-, A., 85.
- Phenoxydiphenylmethyl benzoate, A., 840.
- β -Phenoxy-*aa*-diphenylvinylsulphonic acid, methyl ester, A., 964.
- 3- β -Phenoxyethylindole, A., 1306.
- 3- β -Phenoxyethylindole-2-carboxylic acid, and its ethyl ester, A., 1306.
- 4-Phenoxy-4'-methoxydiphenyl ether, A., 479.
- o*-Phenoxyphenylarsinic acid, A., 1173.
- 2-Phenoxy-3-phenylthionaphthen, A., 964.
- 2-Phenoxy-3-*p*-tolyl-6-methylthionaphthen, A., 964.
- 8-Phenoxy- α -*NNN*-trimethyltetramethyleammonium chloroaurate and hydroxide, A., 718.
- Phenthiazine-3:8-disulphonic acid, 5-nitro-, potassium salt, A., 84.
- Phenyl alkyl ethers, saturated, rearrangement of, A., 838.
allyl, propyl, and *di*bromopropyl ethers, *di*-, *tetra*-, and *penta*-bromo-, and *dichloro*-, A., 616.
1-anthraquinonyl ethyl ether, A., 488.
arsinosulphides, *p*-chloro-*p*-cyano- and nitro-, A., 1404.
azide, additive compounds of, A., 489.
benzyl ether, 2:6-*dichloro*-, 2-chloro-4-iodo-, and *p*-iodo-, and its iodo*di*chloride, A., 837, 1047.
4-nitro-2-amino-, hydrochloride of, A., 1314.
p-bromobenzyl ether, 2:4:6-*trinitro*-, A., 1042.
 β -bromocetyl and *n*- and *isopropyl* ethers, *p*-iodo-, and their iodo*di*chlorides, A., 837.
 β -*di*bromo- and β -*di*chloropropyl ethers, 2-chloro-4-iodo-, and *p*-iodo-, and their iodo*di*chlorides, A., 837.
chloro- and hydroxy-alkyl sulphides, A., 1032.
 β -chloroallyl ether, A., 952.
trichloromethyl carbonates, *p*-chloro- and *p*-nitro-, A., 212.
crotyl ethers, A., 838.
derivatives, aliphatic, heat capacities of, A., 1362.
ethyl carbonate, *p*-iodo-, and its iodo*di*chloride, A., 837.
 α -ethyl-, α -propyl-, and α -*trimethyl*-crotyl ethers, A., 838.
2-hydroxy-1-naphthyl sulphide, 2:5-*di*bromo-, and 2-iodo-, methyl ether, A., 739.
iodide *dichloride*, decomposition of, A., 339, 1151.
iodo*di*fluoride, and its molecular compound with phenanthrene, and *p*-chloro- and nitro-, A., 611.
mono- and *di*-nitroglyceryl ethers, 2:4:6-*trinitro*-, A., 722.
nitro-2-hydroxy- α -naphthyl sulphides, A., 838.
propargyl ethers, A., 618.
di- and *tri*-bromo-, and *dichloro*-, and their salts, A., 616.
propyl ethers, amino-, and nitro-, A., 1153.
sulphate, synthesis of, in dogs, A., 1450.
disulphoxide, 2-iodo-, A., 739.
 α -*gamma*-tetramethylbutyl ether, A., 346.
p-tolyl ether, nitration of, and *di*- and *tri*-nitro-, 3-nitro-*p*-tolyl ether, and 4-nitro-, and 3:5-*di*nitro-*p*-tolyl ether, A., 84.
triphenylpropargyl ether, A., 618.
- Phenylacetaldehyde, and its polymerisation, A., 843.
2:4-*di*nitrophenylhydrazones, A., 937.
- Phenylacetanilide, and *o*-chloro-, A., 732.
- Phenylacetic acid, action of ozone on, A., 351.
mutual displacement of salicylic acid and, and their compounds with β -naphthylamine, A., 483.
esters of, A., 482, 1070.
acylaminophenyl esters, A., 615.
and *p*-chloro-, ethyl esters, condensation of, with magnesium *isopropyl* halides, A., 726.
- Phenylacetic anhydride, polymerisation and pyrogenic decomposition of, A., 355.
- Phenylacetimidomethyl ether hydrochloride, A., 482.
- α -Phenylacetoacetic acid, ethylester, keto-enolequilibrium of, A., 88.
spectrometric analysis of, A., 726.
- Phenylaceto-*p*-dimethylaminoanilide, and *o*-chloro-, A., 732.
- Phenylacetohydrazide, A., 475.
- Phenylaceto-*p*-3:4-methylenedioxyanilide, and *o*-chloro-, A., 732.
- Phenylacetoneitrile, hydrogenation of, catalytically, A., 950.
condensation of, with aromatic aldehydes, A., 620.
salts of, A., 609.
oxide, oximino-, benzoyl derivatives, A., 1157.
- Phenylacetothioamide, α -hydroxy-, acetyl and benzoyl derivatives, A., 353.
- α -Phenyl- β -*p*-acetoxypheylhydrazine, and its α -acetyl derivative, A., 476.
- Phenylacetyl chloride, molecular compound of, with *p*-benzeneazophenol, A., 613.
- Phenylacetylene, triacetoxymercuri-derivative, A., 65.
- Phenylacetyl-*d*-isomenthylamine, A., 229.
- 1-Phenylacetyl-4-methylnaphthalene, A., 1157.

- 2-Phenylacetylnaphthalene, A., 1157.
 9-Phenylacridine, dibromo-, and its hydrochloride, A., 966.
 β -Phenyladipic acid, A., 620, 1055.
 Phenylalanine, and dihydroxy-, dissociation constants of, A., 565. in the organism, A., 1185.
 Phenylalanine, 3:4-dihydroxy-, determination of, and its mixtures with tyrosine, A., 1332.
dl-Phenylalanine, *p*-amino-, ethyl ester, A., 650.
 Phenylalanines, 3:4-dihydroxy-, A., 1291.
 1-Phenyl-2-amino-alcohols, hydroxylated in nucleus, (P.), B., 1121.
 Phenylaminocamphors, and iodo-, and their derivatives, A., 848.
 Phenylaminomethylcarbinol, 3:4-dihydroxy-, physiological action of, A., 120.
 2-Phenylaminoquinoline, *p*-amino-, dihydrochloride, A., 751.
l- γ -Phenylamyl alcohol, and its bromide, A., 1413.
l- β -Phenylamylamine, A., 1413.
 1-Phenyl-4-*n*-amylcyclohexane-3:5-dione, A., 92.
 Phenyl *n*-amyl ketones, *o*-hydroxy-, semicarbazone of, A., 224.
 α -Phenyl- β -anisylbutyric acid, β -hydroxy-, and its methyl ester, A., 844.
 5-Phenyl-3-anisylisooxazoline, A., 223.
 2-Phenylanthranyl acetate, A., 1058.
 2-Phenylantraquinone, amino-derivatives, (P.), B., 195*.
 Phenyl-1-antraquinonyl ketoxime anhydride, A., 357.
 2-Phenylanthrone, 10-bromo-, A., 1058.
 10-Phenylanthrone, dichloro-, A., 1294.
 Phenylarsenic disulphide, 3-nitro-4-thiol, A., 1434.
 Phenylarsinic acid, *p*-amino-, derivatives of, A., 636, 1078.
 4-amino-2-hydroxy-, acetyl derivative, homologues of, A., 1434.
 Phenylarsinic acids, amino-, synthesis of 6-methoxyquinoline derivatives of, A., 372.
 3-nitro-4-thiocyano-, and thiocyno-, A., 244.
 Phenylbenzamidofurazan, A., 715.
 Phenylbenzenylhydrazidine, 4-bromo-2-nitro-, A., 1416.
 2-Phenyl-1-benzhydrylhydriindene, A., 208.
 3-Phenyl-1-benzhydrylidenehydriindene, constitution of, A., 208.
 2-Phenyl-1-benzhydrylidene, A., 208.
 Phenylbenzhydryl ketone, A., 948.
N-Phenylbenzimidino-4-chlorophenyl ether, 3-chloro-, A., 501.
 4-chloro-, A., 87.
N-Phenylbenzimidino-*o*-tolyl ether, 4-chloro-, A., 501.
 2:4'-Phenylbenzoylbenzoic acid, preparation of, and amino-, chloro- and hydroxy-derivatives, (P.), B., 195*.
 4-Phenyl-4-benzoyl-2:3:5:6-dihydroxybenzopyran, and its dipotassium salt, A., 627.
 2-Phenylbenzthiazole, 5-chloro-, A., 348.
 6-Phenylbenzthiazole, 2-amino-, and 2-thiol-, and its disulphide, A., 854.
 Phenyl 2'-(5:6-benzthionaphthenyl)ketone-2:2'-dicarboxylic acid, A., 1164.
 α -Phenyl- β -benzyl-*n*-butane, A., 1072.
 10-Phenyl-9-benzylidimethylanthracenes, A., 612, 1059.
 β -Phenyl- α -benzylethyl styryl ketone dibromide, A., 1072.
 1-Phenyl-4-benzylcyclohexane-3:5-dione, A., 92.
 1-Phenyl-4-benzylcyclohexane-3:5-dione-2-carboxylic acid, ethyl ester, A., 92.
p-Phenylbenzylidene diacetate, A., 1293.
 3-Phenyl-2-benzylidenebenzopyran, and nitro-, A., 1070.
 10-Phenyl-9-benzylidene-9:10-dihydroanthracene, 1:4-dichloro-, A., 1294.
 10-Phenyl-9-benzylidene-1:4-dimethyl-9:10-dihydroanthracene, A., 341.
p-Phenylbenzylidenemalonic acid, A., 1293.
 β -Phenyl- α -benzyl- α -methylethanol, A., 1269.
 ϵ -Phenyl- β -benzyl- $\delta\beta$ -*n*-pentenylidenecyclohexylamine, A., 343.
 Phenylbenzyl- ω -piperidinomethylcarbinol hydrochloride, A., 850.
 γ -Phenyl- β -benzylpropanol, and its phenylurethane, A., 1269.
 α -Phenyl- α -benzylpropionic acid, benzyl ester, A., 1269.
 γ -Phenyl- β -benzylpropylamine, benzoyl derivative, A., 1269.
 3-Phenyl-2-benzylquinoline, 4-hydroxy-, A., 236.
 3-Phenyl-2-benzyl-1:2:3:4-tetrahydroquinoline, A., 236.
 Phenylboric acid, *p*-bromo-, and its oxide, and *o*-chloro-, A., 244.
 Phenylboric acids, amino-, and their derivatives, and nitro-, and their action on bacteria, A., 502.
 Phenyl α -bromo- β -benzylaminostyryl ketone, A., 731.
 Phenyl α -bromo- β -diethylaminostyryl ketone, A., 731.
 α -Phenyl-3-bromo-4-dimethylaminocinnammonitrile, A., 87.
 Phenyl 3-bromo-4-dimethylaminostyryl ketone, and its hydrochloride, A., 88.
 α -Phenyl- β -bromoethyl ethyl ether, A., 710.
 Phenyl α -bromo- β -hydroxy- $\beta\beta$ -diphenylethyl ketone, A., 354.
 2-Phenyl-2-bromomethyl-4:5-benzo-7-allylaminodihydro-1:3:6-heptathiodiazine, A., 854.
 2-Phenyl-2-bromomethyl-4:5-benzo-7-ketotetrahydro-1:3:6-heptathiodiazine, A., 854.
 Phenyl-*tri*bromomethylcarbinol, esters of, A., 219.
 4-Phenyl-2-bromomethylthiazole, A., 748.
 $\alpha\alpha$ -Phenyl- α -bromophenylethylene, A., 947.
 Phenyl α -bromo- β -phenylethyl ketone, A., 850.
 1-Phenyl-4-*p*-bromophenylthiosemicarbazide, A., 721.
 Phenyl α -bromo- β -piperidinostyryl ketone, A., 731.
 Phenylbutadienes, hydrogenation of, catalytically, A., 719.
 isomeric, preparation of, A., 349.
 δ -Phenyl- $\Delta\gamma$ -butadienephosphinic acid, and its salts, A., 947.
 β -Phenylbutane, $\alpha\delta$ -dibromo-, A., 620.
l- β -Phenylbutane, A., 1413.
 α -Phenylbutane- $\alpha\gamma$ -diol, A., 1035.
 β -Phenylbutane- $\alpha\delta$ -diol, and its bisphenylurethane, A., 620.
 Phenylbutane- $\alpha\beta$ -dione, α -2:4-dihydroxy-, and its derivatives, A., 93.
 8-Phenylbutanephosphinic acid, and its salts, A., 947.
 β -Phenylbutanetricarboxylic acids, and their ethyl esters, A., 67.
 α -Phenyl- $\Delta\alpha$ -butenes, A., 719.
 γ -Phenyl- $\Delta\beta$ -butene- $\alpha\alpha$ -dicarboxylic acid, ethyl ester, A., 604.
 α -Phenyl- $\Delta\beta$ -butenoic acid, anilide from, A., 1290.
 Phenyl $\Delta\alpha$ -butenyl ketone, A., 1399.
l- γ -Phenylbutyl alcohol, and its bromide, A., 1413.
 Phenyl-*n*-butylmalonic acid, and its ethyl ester, A., 1269.
 δ -Phenylbutylmethylamine, and its hydrochloride, A., 725.
 β -(δ -Phenylbutylmethylamino)ethyl benzoate hydrochloride, and its *p*-nitro-derivative, A., 725.
 γ -(δ -Phenylbutylmethylamino)propyl benzoate hydrochloride, and its derivatives, A., 725.
 Phenyl-*n*-butyl- ω -piperidinomethylcarbinol hydrochloride, A., 850.
 δ -Phenylisobutylthiocarbamide, A., 969.
N- δ -Phenylbutyl-*p*-toluenesulphonamide, and its *N*-methyl derivative, A., 725.
 β -Phenylbutyric acids, and the *l*-ethyl ester, A., 1413.
 Phenylcarbamic acid, chloriodo- and iodo-phenyl esters, A., 345, 837.
 Phenylcarbamic acid, *p*-amino-, acetyl derivative, esters of, A., 1287.
 2:4-dichloro-, chloro- and iodo-phenyl esters, A., 345, 837.
 o -hydroxy-, ethyl ester, benzenesulphonyl derivative, A., 1288.
 p -nitro-, esters, A., 709.
 Phenylcarbamidoadipylurethane, A., 830.
 Phenylcarbamidosuccinylurethane, A., 830.
 Phenylcarbimide, action of, on aromatic amino-oximes, A., 1416.
 with $\alpha\delta$ -diethylhydrazine, A., 474.
 Phenylcarbimide, 2:4-dichloro-, A., 345.
 p -nitro-, A., 1151.
 Phenylcarbimido- β -alanyl-*l*-histidine, A., 1191.
 1-Phenylcarbohydrazide, and its derivatives, A., 475.
 1-Phenylcarbohydrazido-5-carbonanilide, A., 475.
 1-Phenylcarbohydrazidoformic acid, ethyl ester, A., 475.
 1-Phenylcarbohydrazido-5-thiocarbonallylamide, A., 475.
 1-Phenylcarbohydrazido-5-thiocarbonanilide, A., 475.
 1-Phenylcarbohydrazido-5-thiocarbonmethylamide, A., 475.
 1-Phenylcarbohydrazido-5-thiocarbonfolmidides, A., 475.
 1-Phenylcarbohydrazido-5-thiocarbon-*m*-4-xylylide, A., 475.
 1-Phenylcarbohydrazidodithioformic acid, potassium salt, A., 475.
 α -Phenyl- β -*p*-carboxyphenylhydrazine, α -acetyl derivative, A., 476.
 6-Phenyl-3-*o*-carboxyphenylpyridine-2:4-dicarboxylic acid, and its salts and derivatives, A., 97.
 Phenyl-3-chloroaceneaphthanaphthazonium nitrate, A., 632.
 Phenyl-*p*-chlorobenzylhydrazine, and its hydrochloride, A., 938.
 Phenylchloromethylcarbinol, A., 1050.
 2-Phenyl-4-chloromethylthiazole, A., 103.
 4-Phenyl-2-chloromethylthiazole, A., 748.
 $\alpha\alpha$ -Phenylchlorophenylethylenes, A., 947.
 Phenyl β -chloro- α -phenylethyl ketone, A., 86.
 4-Phenylchroman, derivatives of, A., 1069.
 2-Phenylcinchoninic acids, *mono*- and *di*-bromo-, A., 365.
 3-bromo- and 3-iodo-, A., 1435.
 Phenylcoumarins, A., 1070.
 2-Phenylcoumarone, 5-nitro-, A., 1070.
 Phenyl-6-coumarylthiocarbamide, A., 1423.
 Phenyl-6-coumarylthiosemicarbazide, A., 1423.

- Phenyl cyanomethyl ketone, 4-bromo-, 4-iodo-, and 3-nitro-, A., 91.
 Phenylcyanopyrrolic acid, ethyl ester, preparation of, A., 840.
 Phenylcystine, 2:4-dinitro-, A., 124.
 9-Phenyl-1:2:3:4-dibenzanthracene, A., 948.
 Phenylidibenzhydrylcarbinol, A., 948.
 9-Phenyl-1:2:7:8-dibenzoxanthene, *m*-chloro-. See *ms*-Phenyl-dinaphthopyran, *m*-chloro-.
 Phenylidibenzoxanthene *perchlorate*, A., 1305.
 9-Phenyl-1:2:7:8-dibenzoxanthylidene, *m*-chloro-. See *ms*-Phenyl-dinaphthopyranol, *m*-chloro-.
d-α-Phenyl-β-β-dibenzylethylene glycol, dehydration of, by heat, A., 955.
 Phenyl-di-*tert*-butylpropylcarbinol, A., 194.
 Phenylidicarbazolydimethane, A., 632.
 Phenyl-di-*SS*-cysteinyllarsine, 3-amino-4-hydroxy-, A., 105.
 β-Phenyl-α-di-3:3-dibenzyl-2-indolenylpropane, *m*-nitro-, A., 1073.
 α-Phenyl-β-β-di-*p*-diphenylethylene, and α-bromo-, A., 340.
N-Phenyl-*N'*-diethylaminocarbamide, A., 474.
 Phenyl-diethylsulphonium mercuri-*tri*- and *tetra*-iodide, and trimercurooctaoidide, A., 107.
 Phenylidiguamide hexasulphide, A., 474.
 Phenyl-di-*n*-heptylphosphine, and its salts, A., 1404.
 Phenyl-di-*n*-hexylphosphine, and its salts and oxide, A., 1404.
 Phenyl-di-*ω*-cyclohexylpropylcarbinol, A., 194.
 3-Phenyl-5:6-dihydrobenzglyoxalocoline, 9:10-dihydroxy-, hydrochloride, A., 365.
 2-Phenyl-4:5-dihydroglyoxaline thiocyanates, A., 237.
 2-Phenyl-4:5-dihydroglyoxalinethiosulphonic acids, A., 237.
 Phenylidihydrodycarpic acid, and its ethyl ester, A., 1290.
 10-Phenyl-5:10-dihydrophenarsazine oxide, A., 373.
 10-Phenyl-9:10-dihydrophenarsazine oxide, A., 637.
 3-Phenyl-1:3-dihydrophthalazine-4-acetic acid, 1-hydroxy-3-2':6'-dibromo-4'-amino- and 4'-nitro-, and 1-hydroxy-3-2':6'-dichloro-4'-amino- and 4'-nitro-, and their derivatives, A., 836.
 3-Phenyl-1:3-dihydrophthalazine-4-acetic-1-sulphonic acid, 3-2':6'-dibromo- and -dichloro-, sodium hydrogen salts, A., 836.
 6-Phenyl-5:6-dihydrouracil-3-acetic acid, and its derivatives, A., 367.
 Phenyl-di-2-hydroxy-α-naphthylmethane, *m*-chloro-, and its derivatives, A., 493.
 8-Phenyl-3:6-dimethylallantoin-5-carboxylmethylamide, A., 852.
 Phenyl-*p*-dimethylaminobenzyl ketone, *p*-chloro-, and its oxime, A., 1158.
 2-Phenyl-10-*p*-dimethylaminophenylanthrone, A., 1058.
 α-Phenyl-β-*p*-dimethylaminophenylethane, and its methiodide, A., 92.
 1-Phenyl-5-*p*-dimethylaminophenyl-3-methylpyrazole, A., 88.
 2-Phenyl-4-*p*-dimethylaminophenyl-5-methyl-1:2:3-triazole, *p*-nitro-, A., 722.
 4-Phenyl-2-*p*-dimethylaminostyrylquinolines, nitro-, A., 235.
 10-Phenyl-dimethylanthranil acetates, A., 1059.
 10-Phenyl-dimethylanthrones, A., 341, 612, 1059.
 4-Phenyl-2:3-dimethyl-5:6-benzometoxazinium ferrichloride, A., 498.
 β-Phenyl-αα-dimethylbutyric acid, and its lactone, A., 1270.
 Phenyl-di-1-methylcarbazolydimethane, A., 632.
 Phenyl-4:7-dimethylcoumarylthiocarbamide, A., 1423.
 β-Phenyl-λ8-dimethyl-λ7-hexen-β-ol, A., 714.
 3-Phenyl-1:1-dimethylhydrinden-3-ol, A., 946.
 2-Phenyl-1:1-dimethylindene, and 3-nitro-, A., 340.
 10-Phenyl-1:4-dimethyl-9-methylene-9:10-dihydroanthracene, A., 341.
 1-Phenyl-3:5-dimethylpyrazole, 4-amino-, and its salts and derivatives, A., 99.
 1-Phenyl-3:5-dimethylpyrazole-4-azoacetylacetone, A., 99.
 1-Phenyl-3:5-dimethylpyrazole-4-azoethyl acetoacetate, A., 99.
 1-Phenyl-3:5-dimethylpyrazole-4-diazonium derivatives, A., 99.
 1-Phenyl-dimethylpyrazolinium hydroxide, 4-hydroxy-, and its salts, A., 742.
 6-Phenyl-1:4-dimethyl-2-pyridine, and 3-cyano-, A., 1165.
 4-Phenyl-2:6-dimethylpyridine-3:5-dicarboxylic acid, *o*-nitro-, ethyl ester, A., 1072.
 Phenyl-di-1-methyltetrahydroquinolylmethane, A., 632.
 9-Phenyl-2:7-dimethylthioxanthene, A., 97.
 9-Phenyl-2:7-dimethylthioxanthylidene, and its chloride hydrochloride, A., 96.
 6-Phenyl-1:3-dimethyluracil, A., 367.
ms-Phenyl-dinaphthopyran, *m*-chloro-, A., 493.
ms-Phenyl-dinaphthopyranol, *m*-chloro-, and its salts and derivatives, A., 493.
 Phenyl-di-*n*-octylphosphine, and its salts and oxide, A., 1404.
p-Phenyl-β-β-diphenylethane-α-phosphinic acid, A., 947.
o-Phenylidiphenylethylene, and its isomer, A., 947.
p-Phenylidiphenylvinylphosphinic acid, A., 947.
 Phenyl-4-diphenyl ketone, 4'-nitro-, A., 487.
 Phenylidiphenyl-α-naphthylmethyl, electron affinity of, A., 946.
l-Phenylidiphenyl-α-naphthylmethylthioglycolic acid, halochromic compounds of, A., 480.
 Phenylidiquinolylmethane, and *mono*- and *di*-hydroxy-, and nitro-, and their derivatives, A., 632.
 Phenyliditetrahydroquinolylmethanes, *mono*- and *di*-hydroxy-, and *m*-nitro-, A., 632.
m-Phenyl-α-dithiolcinnamic acid, A., 233.
 α-Phenyl-β-β-ditolylethylene glycols, A., 1290.
p-Phenylene diarsinodisulphide, A., 1404.
p-Phenylenebisaminomethylenecamphors, and their rotation, A., 231.
o-Phenylenediacetdianilide, A., 495.
m-Phenylenediamine, molecular compounds of, with salicylic acid and β-naphthylamine, A., 483.
p-Phenylenediamine, differentiation of *p*-tolylenediamine and, B., 195.
 Phenylenediamines, condensation of, with aromatic nitro-derivatives, A., 211.
 fluosilicates of, A., 612.
m-Phenylene-1:1'-di-3:5-dimethylpyrazole, A., 1409.
m-Phenylenedihydrazine, and its salts and derivatives, A., 1409.
o-Phenylene-9:10-dihydroanthracene, 1:4-dihydroxy-, A., 1044.
 Phenylenediphenylbenzbitulene, A., 1407.
m-Phenylene-(β-disulphonyl-β-phenylpropionic acid), A., 233.
 Phenylenediundecic acid, and its diethyl ester, A., 1290.
o-Phenylene ethylene oxamide, A., 852.
 Phenylenefluorans, 5:7-dibromo-6-hydroxy-, 4:5:6-tribromo-3:6-dihydroxy-, and 3:6-dihydroxy-, A., 627.
m-Phenylene-β-dithiolcinnamic acid, A., 233.
 Phenylethane, α-β-dibromo-α-nitro-β-*m*-nitro-, A., 1418.
 β-Phenyl-β-ethinylbutan-β-ol, A., 1050.
 9-Phenylethynylfluorene, A., 618.
 1-Phenylethynylcyclohexan-1-ol, A., 618.
 α-Phenyl-β-*p*-ethoxyphenylhydrazine, β-acetyl derivative, A., 476.
l-α-Phenylethyl alcohol, hydrogenation of, and its configurational relationship to *d*-α-phenyl-*n*-propyl alcohol, A., 85.
 β-Phenylethyl alcohol, preparation of, A., 1411.
 β-Phenylethyl alcohol, *o*-amino- and *o*-nitro-, and their esters, A., 480.
 β-Phenylethyl bromide, and *p*-nitro-, additive compounds of, with hexamethylenetetramine, A., 952.
dl-α-Phenylethylamine, *p*-nitro-, and its salts, A., 937.
 β-Phenylethylamine, derivatives of, A., 839, 1170.
 β-Phenylethylamine, *m*-bromo-, A., 1077.
p-hydroxy-(*tyramine*), preparation of, A., 213.
 synthesis of, and *p*-nitro-, tin derivative, A., 952.
 and its derivatives, as precursors of black pigments, A., 1101.
 β-Phenylethylamines, A., 213, 952.
 nuclear, methoxylated, derivatives of, A., 839.
 β-Phenylethylamines, β-hydroxy-, salts and derivatives of, A., 219.
 5-Phenylethylaminoiminothiolhydantoin, A., 495.
 β-Phenylethylamino-α-2-nitro-3:4-dimethoxyphenylethane, *m*-bromo-, A., 1077.
l-Phenylethylammonium ethylvinylcarbinyl phthalate, A., 1393.
 β-Phenylethylbenzo-β-naphthaspiropyran, A., 964.
 3-Phenyl-2-ethylbenzisooxazolinium salts, A., 498.
 β-Phenylethyl-*n*-butylmalonic acid, and its ethyl ester, A., 1269.
 Phenylethylcellobiosides, *hepta*acetates of, A., 73.
 Phenylethyldiethylamine, *p*-amino-, A., 751.
 2-Phenylethyldiethylamino-6-methoxyquinoline, *p*-amino-, methiodide, salts of, A., 752.
 2-Phenylethyldiethylaminoquinoline, *p*-amino-, methiodide hydrochloride, A., 751.
dl-α-Phenylethyldignanide, A., 1045.
 3-β-Phenylethyldi-β-naphthaspiropyran, A., 964.
 α-Phenylethylene, β-nitro-α-*m*-bromo-, A., 1077.
 β-(α'-Phenylethyl)glutaric acid, and α-cyano-, ethyl ester, A., 604.
 α-Phenylethylguanidines, A., 1045.
 1-Phenyl-4-ethylcyclohexane-3:5-dione, A., 92.
 α-(β-Phenylethyl)hexoic acid, A., 1269.
 β-Phenylethylhomoveratrylamine, A., 1048.
 β-(β-Phenylethylmethylamino)ethyl benzoate hydrochloride and its derivatives, A., 725.

- γ -(β -Phenylethylmethylamino)propyl benzoate hydrochloride, and its derivatives, A., 725.
- β -Phenylethylphthalimide, *p*-amino-, hydrochloride, and *p*-nitro-, A., 952.
- 1- α -Phenylethylpiperidine picrate, A., 1404.
- Phenylethyl- ω -piperidinomethylcarbinol hydrochloride, A., 850.
- β -(α -Phenylethyl)propano- $\alpha\gamma$ -tricarboxylic acid, A., 604.
- β -Phenylethyl propyl ketones, A., 1050.
- 4-Phenyl-6-ethyl-2-pyridone, 3-cyano-, 1-methyl derivative, A., 235.
- 2-(β -Phenylethyl)quinoline picrate, A., 364.
- Phenylethylsulphone, A., 1409.
- p*-Phenylethylsulphonylphenylhydrazine, A., 1409.
- s*-Phenylethylthiocarbamide, *p*-chloro-, A., 969.
- d*- β -Phenylethyltrimethylammonium iodide, β -hydroxy-, A., 219.
- α -Phenyl- α -fluorophenylethyl alcohol, A., 947.
- as*-Phenyl- α -fluorophenylethylene, A., 947.
- γ -Phenyl- β -furylbutyrophenone, *p*-bromo- γ -nitro-, and γ -nitro-, A., 360.
- Phenylglycine-*o*-arsinic acid, A., 1173.
- Phenylglycine-2-carboxylic acid, 5-bromo-, dimethyl ester, A., 468.
- Phenylglyoxal, preparation of, A., 486, 1293, 1417.
- and its derivative with acetoacetic acid, A., 843.
- reaction of, with acetoacetic acid, A., 1293.
- Phenylglyoxal, *m*-nitro-, semicarbazone, A., 1418.
- Phenylglyoxime, β -amino-, derivatives of, A., 715.
- Phenylglyoxylic acid, catalytic decomposition of, in presence of aniline, A., 495.
- Phenylglyoxylic acid, *o*-thiol-, A., 1163.
- Phenylguanidine, *p*-amino-, hydriodide, A., 82.
- hypoglycemic action of, A., 871.
- d*- γ -Phenylheptane, A., 1413.
- d*- δ -Phenylheptic acid, and its ethyl ester, A., 1413.
- d*- ϵ -Phenylheptyl alcohol, and its bromide, A., 1413.
- Phenyl *n*-heptyl ketones, hydroxy-, and their derivatives, A., 224.
- d*-Phenylhexanes, A., 1413.
- α -Phenylhexane- $\alpha\gamma$ -dione, enolacetate of, A., 1419.
- 1-Phenylcyclohexane-3:5-dione, 4-alkyl derivatives of, A., 92.
- 4-Phenylcyclohexanone, A., 1055.
- α -Phenylhexoic acid, and its nitrile, A., 1260.
- ϵ -Phenylhexoic acid, and its derivatives, preparation of, A., 66.
- d*-Phenylhexoic acids, and their ethyl esters, A., 1413.
- β -Phenyl- δ -hexolactone, A., 1271.
- d*-Phenylhexyl alcohols, and their bromides, A., 1413.
- α -Phenyl- α -cyclohexylacetic acid, α -hydroxy-, A., 726.
- Phenyl *n*-hexyl ketones, hydroxy-, derivatives of, A., 224.
- Phenylhydrazine, reaction of, with carbonyl compounds, A., 721, 1073.
- action of ethyl nitrate on, in presence of sodium ethoxide, A., 345.
- determination of, A., 1149.
- Phenylhydrazine, 2:4-dinitro-, use of, as reagent for carbonyl compounds, A., 937.
- Phenylhydrazines, *tri*- and *tetra*-chloro-, A., 1046, 1156.
- Phenylhydrazinesulphonic acids, manufacture of ketone hydrazones of, (P.), B., 335.
- 2- β -Phenylhydrazino-4:5-cyclohexano-oxazoline, and its salts, A., 832.
- Phenylhydrazones, action of, with condensing media, A., 1416.
- Phenylhydrazones, *o*-nitro-, action of bromine on, A., 1416.
- 3-Phenylhydrindene-1-carboxylic acid, and its methyl ester, A., 208.
- 5-Phenylhydroxyaminoiminothiohydantoin, A., 495.
- 3-Phenyl-1- α -hydroxybenzhydrylhydrindene, A., 208.
- Phenyl *p*-hydroxybenzyl ketone, 2:4-dihydroxy-, and its oxime, A., 1304.
- 4-Phenyl-2- α -hydroxyethylthiazole, and its benzoate, A., 748.
- Phenylhydroxylamine, action of magnesium and magnesium iodide on, A., 721.
- Phenylhydroxylamine, 2:5-dichloro-, A., 1283.
- 4-Phenyl-2-hydroxymethylthiazole, synthesis of, and its derivatives, A., 747.
- Phenyl-2-hydroxy-1-naphthylmethane-2'-carboxylic acid, and its derivatives, A., 1292.
- 4-Phenyl-4-*tri*hydroxyphenyl-2:3:5:6-dihydroxybenzopyran, A., 627.
- Phenyl 8-hydroxy-5-quinolyl ketoxime, Beckmann rearrangement with, A., 741.
- Phenyl α -hydroxy- $\alpha\beta$ -triphenylethyl ketone, A., 354.
- Phenyliminocamphors, and iodo-, A., 848.
- Phenyliminoesters, hydroxy-, Hoesch-Houben synthesis of, A., 723.
- γ -Phenyliminovaleri-*p*-toluidide, A., 944.
- 3-Phenylindene, dimeride of, A., 208.
- 3-Phenylindene-1:1-dicarboxylic acid, methyl ester, A., 208.
- 3-Phenylindone, 2:6-dibromo-, oxime of, A., 949.
- N*'-Phenyl-*N*- β -iodoethylcarbamide, A., 832.
- N*'-Phenyl-*N*-2-iodocyclohexylcarbamide, A., 832.
- β -Phenyl-2-iodocyclohexylsemicarbazide, A., 832.
- α -Phenyl- β -*p*-iodophenylhydrazine, α - and β -acetyl derivatives, A., 476.
- Phenyl-*ul*-leucylglycine, and dinitro-, A., 124.
- Phenylmalonic acid, preparation of, and chloro-, A., 483.
- ethyl ester, condensation of, with chloromethyl ether, A., 1293.
- Phenylmercapturic acid, *p*-iodo-, in rats and rabbits, A., 1182.
- Phenylmercuric salts, *p*-bromo-, and *o*-chloro-, A., 244.
- Phenylmercurithiosalicylic acid, A., 637.
- Phenyl *p*-methoxybenzyl ketone, oximes of, A., 732.
- Phenyl *p*-methoxybenzyl ketone, 2:4-dihydroxy-, and its oxime, A., 1304.
- Phenyl-4'-methoxybenzyl ketone, 2:4-dihydroxy-, A., 738.
- Phenyl-2-methoxy-3-naphthylsulphone, 2:4-dinitro-, A., 479.
- β -Phenyl- β -*p*-methoxyphenylethane- α -phosphinic acid, *p*-chloro-, A., 947.
- as*-Phenylmethoxyphenylethylene, and *p*-chloro-, A., 947.
- Phenyl β -methoxy- α -phenylethyl ketone, and its derivatives, A., 80.
- 7-Phenyl-3-methyl-8-acenaphthene, A., 1157.
- Phenylmethylaminoethanol, *p*-hydroxy-, hydrochloride, B., 696.
- 5-Phenylmethylaminoiminothiohydantoin, A., 495.
- 1-Phenyl-3-methyl-4-benzeneazo-5-pyrazolone, metallic derivatives of, A., 835.
- 4-Phenyl-2-methyl-5:6-benzometoxazine, and its salts, A., 498.
- Phenyl-5-methylbenzthiazoles, *di*- and *tri*-amino- and 6-amino- *mono*- and *di*-nitro-, A., 498.
- γ -Phenyl- α -methylbutyryl chloride, A., 1050.
- Phenylmethylcarbinol, optically active, halogenation of, A., 480.
- Phenylmethylcarbinol, 2:5-dichloro-, A., 1283.
- 3-Phenyl-4-methylcoumarin, 7-hydroxy-, A., 962.
- 6-Phenylmethyl-5:6-dihydrofuracils, and 5-bromo-, A., 367.
- 9-Phenyl-9-methylfluorene, A., 947.
- β -Phenyl- α -methylglutaric acid, γ -cyano-, ethyl ester, A., 67.
- 2-Phenyl-1-methylcyclohexane, and its oxide, A., 614.
- 2-Phenyl-1-methylcyclohexanediol, A., 614.
- 1-Phenyl-4-methylcyclohexane-3:5-dione, A., 92.
- 1-Phenyl-4-methylcyclohexane-3:5-dione-2-carboxylic acid, ethyl ester, A., 92.
- 2-Phenyl-1-methylcyclohexanol, and its transformations and derivatives, A., 614.
- 5-Phenyl-3-methyl-2'-cyclohexen-1-one-4:6-dicarboxylic acid, ethyl ester, dibromide of, A., 730.
- fur*Phenyl-2-methyl-1:9-hydrofurano-10-anthroxyl, hydroxy-, A., 846.
- 4-Phenyl-4-methyl-2:3-5:6-dihydroxybenzopyran, and its derivatives, A., 627.
- Phenylmethyloxazolines, α -amino-, and *d*-2-amino-, and its hydrogen *d*-tartrate, A., 832.
- 3-Phenyl-4-methylphthalaz-1-one, amino-, and nitro-, and their salts, A., 836, 1169.
- 2':6'-dibromo-4'-amino- and -4'-nitro-, and 2':6'-dichloro-4'-amino- and -4'-nitro-, and their derivatives, A., 836.
- N*-Phenyl-3-methylphthalimidine, amino-, and *p*-hydroxy-, and its ethyl ether, A., 836, 1169.
- 2'-bromo-4'-amino-, and its acetyl derivative, A., 836.
- Phenylmethyl- ω -piperidinomethylcarbinol hydrochloride, A., 850.
- γ -Phenyl- β -methyl- $\Delta\beta$ -propenylidenecyclohexylamine, A., 343.
- γ -Phenyl- α -methylpropyl alcohol, and its phenylcarbimide derivative, A., 349.
- γ -Phenyl- α -methyl-*n*-propyl methyl ketone, A., 1050.
- 1-Phenyl-5-methylpyrazole, 4-hydroxy-, and its bromo- and chloro-derivatives, and their derivatives, A., 742.
- 5-Phenyl-3-methylpyrazole-4-carboxylic acid, ethyl ester, A., 1035.
- 1-Phenyl-3-methylpyrazolone, oximino-, condensation product of, with thiohydantoin, A., 495.
- 9-Phenyl-10-methylpyridinium chlorides, amino-, A., 1308.
- 4-Phenyl-6-methyl-2-pyridone, 3-cyano-, and its 1-methyl derivative, A., 235.
- 6-Phenyl-4-methyl-2-pyridone-3-carboxylic acid, ethyl ester, A., 235.
- 4-Phenyl-6-methyl-2-pyrone, A., 235.

- 4-Phenyl-6-methyl-2-pyrone-3-carboxylic acid, ethyl ester, A., 235.
 2-Phenyl-3-methylquinoline, 4-amino-, 4-chloro-, and their salts and acetyl derivative, and 4-hydroxy-, A., 1307.
 2-Phenylmethylquinolines, 4-amino-, and their derivatives, A., 1429.
 4-Phenyl-2-methylquinolines, amino-, and their hydrochloride, and nitro-, A., 235.
 2-Phenyl-3-methylquinoline-4-carboxylic acid, derivatives of, A., 1306.
 2-Phenylmethylquinoline-4-carboxylic acids, and their derivatives, A., 1429.
 2-Phenylmethylquinoline-4-carboxylic acids, amino-, derivatives of, A., 99.
 1-(2'-Phenylmethyl-4'-quinolyl)-3-methyl-5-pyrazolones, A., 1429.
 Phenylmethylsulphoxide, 4-bromo-, A., 1414.
 6-Phenylmethylthiocarbamide, *p*-fluoro- and *p*-iodo-, A., 969.
 6-Phenyl-3-methyluracil, A., 367.
 6-Phenyl-1-methyluracil-3-acetic acid, and its derivatives, A., 367.
 2-Phenyl-naphthalene-5:2'-dialdehyde, and its derivatives, A., 741.
 2-Phenyl-naphthalene-5:2'-dicarboxylic acid, and its salts, A., 741.
 2-Phenyl-naphthacoumarone, A., 1070.
 2-Phenyl- $\alpha\beta$ -naphth-1:2:3-triazole, disulphonic derivatives of, A., 1431.
 2-Phenyl- $\alpha\beta$ -naphth-1:2:3-triazole-4'-carboxylic acid, diethyl-aminoethyl ester, and its sodium sulphonate, A., 1431.
 5-Phenyl-naphthylaminoiminodihydroantoin, A., 495.
 Phenyl- α -naphthylarsine oxide, A., 372.
 Phenyl- α -naphthylarsinic acid, A., 372.
 Phenyl- α -naphthylchloroarsine, A., 372.
 Phenyl- α -naphthylcyanoarsine, A., 372.
 Phenyl- α -naphthylglycollic acids, preparation of, from *l*-menthyl α -naphthoformate, A., 619.
 Phenyl- α -naphthyl- ω -piperidinomethylcarbinol hydrochloride, A., 850.
 Phenyl-nitrobenzenylhydrazides, 4-bromo-2-nitro-, A., 1416.
 α -Phenyl-3-nitro-4-dimethylaminocinnamitrile, A., 87.
 1-Phenyl-4-*m*-nitrophenyl-2:6-dimethyldihydropyridine-3:5-dicarboxylic acid, ethyl ester, A., 850.
 Phenyl- β -2:4:5-trinitrophenylethyl alcohol, α -2:4-dinitro-, and its benzoate, A., 208.
 4-Phenyl-6-*p*-nitrophenylpyridine, 2-hydroxy-, A., 235.
 4-Phenyl-6-*p*-nitrophenyl-2-pyridone, 3-cyano-, and its 1-methyl derivative, A., 235.
 4-Phenyl-6-*p*-nitrophenyl-2-pyrone, A., 235.
 4-Phenyl-6-*p*-nitrophenyl-2-pyrone-3-carboxylic acid, ethyl ester, A., 235.
 1-Phenyl-4-*m*-nitrophenylthiosemicarbazide, A., 721.
d-8-Phenyl-octane, A., 1413.
l-8-Phenyl-octic acid, and its ethyl ester, A., 1413.
l- ϵ -Phenyl-octyl alcohol, and its bromide, A., 1413.
 Phenyl-octylamine, A., 342.
 Phenyl *n*-octyl ketones, hydroxy-, and their derivatives, A., 224.
 Phenyl oximinodethyl ketone phenylhydrazone, A., 239.
 ϵ -Phenylpentadienal, A., 1293.
 γ -Phenylpentane, $\alpha\epsilon$ -dibromo-, A., 620.
 γ -Phenylpentane- $\alpha\epsilon$ -diol, and its bisphenylurethane, A., 620.
 Phenylcyclopentylmethane, A., 339.
 9-Phenylphenanthridines, amino-, and their derivatives, and nitro-, A., 1308.
 α -Phenylphenol as germicide for *Mycobacterium tuberculosis*, A., 877.
 Phenyl- δ -phenylbutyl- ω -piperidinomethylcarbinol hydrochloride, A., 850.
 1-Phenyl-3-phenyl-4'-1:2-diazene, *p*-nitro-, A., 1074.
 Phenylphenylene thiazathionium hydroxide and chloride, A., 854.
 Phenyl β -phenylethyl ketones, *poly*hydroxy-, A., 1162.
 Phenyl- β -phenylethyl- ω -piperidinomethylcarbinol hydrochloride, A., 850.
 3-Phenyl-5-phenylisooxazole, *p*-bromo-, A., 622.
 Phenyl- γ -phenylpropyl- ω -piperidinomethylcarbinol hydrochloride, A., 850.
 3-Phenylphthalaz-1-one, 2':6'-dibromo-4'-amino- and -4'-nitro-, and its picrate, and 2':6'-dichloro-4'-amino- and -4'-nitro-, and its derivatives, A., 836.
N-Phenylphthalimide, 2'-bromo-4'-amino-, and its acetyl derivative, 2':6'-dichloro-, and 2':6'-dichloro-4'-amino-, A., 836.
 γ -Phenylpimelic acid, and its derivatives, A., 620.
 Phenyl α -piperidino- $\beta\beta$ -diphenylethyl ketone, A., 850.
 Phenyl- ω -piperidinomethylcarbinol hydrochloride, A., 850.
 Phenyl α -piperidino- β -phenylethyl ketone, and its derivatives, A., 850.
 Phenyl α -piperidinostyryl ketone, A., 850.
 β -Phenylpropaldehyde, α -bromo-, and α -hydroxy-, and their derivatives, A., 90, 353.
 Phenylpropanediol, *tri*hydroxy-, A., 92.
 α -Phenylpropane- $\alpha\beta$ -dione, A., 611.
 dioxime of, A., 91.
 α -Phenylpropane- $\alpha\beta$ -dione, α -2:4-*di*hydroxy-, and its derivatives, A., 92.
 β -Phenylpropane- $\alpha\gamma\gamma$ -tricarboxylic acid, A., 67.
 Phenyl propenyl ketone δ -phenyl- and δ -phenylthio-semicarbazones, A., 486.
 α -Phenyl- $\Delta\alpha$ -propinene, isolation of intermediate form during isomerisation of, A., 611.
 Phenylpropionic acid, diacetoxymercuri-derivative, A., 65.
 Phenylpropionic acid, *p*-bromo-, A., 949.
dl- α -Phenylpropionamide, α -amino-, acetyl derivative, A., 1436.
 α -(*dl*- α -Phenylpropionamido)isobutyric acid, α -(*dl*- α -amino)-, acetyl derivative, A., 1436.
 β -Phenylpropionanilide, $\alpha\beta$ -dibromo-, A., 223.
 α -Phenylpropionic acid, β -hydroxy-, $\beta\beta$ -substituted derivatives, preparation of, A., 726.
 β -Phenylpropionic acid, action of ozone on, A., 351.
 alkaloid derivatives of, A., 1076.
 β -Phenylpropionic acid, $\alpha\beta$ -dibromo-*p*-bromo-, methyl ester, A., 949.
 β -Phenylpropionic acids, $\alpha\beta$ -dibromo- and -dichloro-, *p*-iodophenyl esters, A., 837.
 β -Phenylpropionitrile, $\alpha\beta$ -dibromo-, A., 222.
 β -Phenylpropionyltyrosine, A., 1076.
 α -Phenylpropyl alcohol, β -amino-, hydrochloride from, A., 834.
d- α -Phenyl-*n*-propyl alcohol, hydrogenation of, and its configurational relationship to *l*- α -phenylethyl alcohol, A., 85.
 Phenylpropylamines, isomeric, preparation and pharmacodynamic activity of, A., 834.
 γ -Phenylpropyl-*n*-butylmalonic acid, and its ester, A., 1269.
 γ -Phenylpropyl ethyl ketone, A., 1050.
 1-Phenyl-4-*n*-propylcyclohexane-3:5-dione, A., 92.
 Phenyl- β -*n*-propylhexoic acid, β -hydroxy-, A., 726.
 α -(γ -Phenylpropyl)hexoic acid, A., 1269.
 Phenyl *n*-propyl ketones, hydroxy-, and their semicarbazones, A., 224.
 Phenyl isopropyl ketones, hydroxy-, and their derivatives, A., 83.
 γ -Phenylpropylmethylamine hydrochloride, A., 725.
 γ -Phenylpropylmethylaminomethanol, A., 725.
 β -(γ -Phenylpropylmethylamino)ethyl benzoate hydrochloride, and its derivatives, A., 725.
 γ -Phenylpropylmethylaminopropanol, A., 725.
 γ -(γ -Phenylpropylmethylamino)propyl benzoate hydrochloride, and its derivatives, A., 725.
 Phenyl-*n*-propyl- ω -piperidinomethylcarbinol hydrochloride, A., 850.
s-Phenyl-*n*-propylthiocarbamide, *p*-chloro-, A., 969.
N- γ -Phenylpropyl-*p*-toluenesulphonamide, and its *N*-methyl derivative, A., 725.
 Phenylpyridine series, stereochemistry in, A., 97.
 Phenylpyridine-3:6'-dicarboxylic acid, 2-*o*-chloro-, and its salts, A., 97.
 Phenylpyridinium chloride, 2:6'-dinitro-4-*p*-amino-, toluene-sulphonyl derivative, A., 1288.
N-Phenylpyrroles, stereochemistry of, A., 362, 1306.
 2-Phenylquinoline, 3-amino-, and its salts, 3-bromo- and 3-chloro-, A., 1307.
 4-amino-6-hydroxy-, hydrochloride, A., 965.
 2-Phenylquinoline-3-carboxylic acid, derivatives of, A., 1307.
 2-Phenylquinoline-3-carboxylic acid, 4-hydroxy-, derivatives of, A., 631.
 2-Phenylquinoline-4-carboxylic acid (*cinchophen*), synthesis of, and 2':4'-*di*hydroxy-, and its esters, A., 99.
 and 6-hydroxy-, derivatives of, A., 965.
 physiological action of, A., 1187.
 2-Phenylquinolinecarboxylic acids, preparation of, A., 1167.
 β -2-Phenyl-4-quinolylamidethylethyl alcohol, A., 965.
 2-Phenyl-4-quinolylaminoformic acid, 6-hydroxy-, ethyl ester, A., 965.
 2-Phenyl-3-quinolylcarbamide, and its salts, A., 1307.
 2-Phenyl-4-quinolylcarbamide, A., 965.
NN'-(2-Phenyl-3-quinolyl)ethylenediamine, and its salts, A., 1307.
N-2-Phenyl-4-quinolylglycine, and its derivatives, A., 363.
 1-(2'-Phenyl-3'-quinolyl)-3-methyl-5-pyrazolone, A., 1307.

- 2-Phenyl-3-quinolylurethane, A., 1307.
 Phenylquinones, stereochemistry of, A., 1295.
 Phenylquinonitroles, nitro-, A., 838.
 1-Phenylsemicarbazide, 4-hydroxy-, A., 475.
 Phenylsilicon trichloride, formation of silicon dichloride or trichlorosilane from, A., 855.
 Phenylstannonic acids, halogeno-, A., 638.
 Phenylstibinic acid, *p*-amino-, uroids of, A., 751.
 Phenyl styryl ketones (*chalkones*), A., 487, 1060.
 Phenyl styryl ketones, *polyhydroxy*-, A., 1162.
 β -Phenyl- β -styrylpropionic acid, β -hydroxy-, ethyl ester, A., 1392.
 2-(β -Phenylstyryl)quinoline, A., 364.
 Phenylsulphamic acid, *p*-amino-, acetyl derivative, sodium salt, A., 720.
 Phenylsulphone, *p*-bromo-, A., 1409.
 p -Phenylsulphonylphenylhydrazine, A., 1409.
 Phenylsulphopropionic acids, A., 955.
 Phenylthallium dibromide and dichloride, A., 971.
 2-Phenylthiazole-4-acetic acid, and its derivatives, A., 103.
 4-Phenylthiazole-2-aldehyde, and its derivatives, A., 748.
 2-Phenylthiazole-4-methylamine, and its hydrochlorides, and *p*-hydroxy-, A., 103.
 4-Phenyl-2-thiazolyl methyl ketone, and its derivatives, A., 748.
 Phenylthiocarbamide, *p*-fluoro-, A., 969.
 p -Phenylthiocarbamidoacetophenone, and its oxime, A., 842.
 p -Phenylthiocarbamidobenzaldoxime, A., 842.
 α -Phenylthiocarbamido- γ -carbethoxyacetamide, A., 496.
 Phenylthiocarbamidodiphenylacetic acid, methyl ester, A., 956.
 1-Phenylthiocarbamyl-4,5-benzo-1:2:3-triazole, A., 854.
 Phenylthiocarbimide, reaction of, with alkylhydrazines, A., 951.
hexasulphide, A., 1407.
 Phenylthiocarbimide, *p*-fluoro-, A., 969.
 Phenyl thiocyanomethyl ketone, and 3-nitro-, A., 91.
 Phenylthiol oxide, *dichlorodinitro*-, A., 124.
 4-Phenylthiolacetophenone, *p*-nitro-, A., 487.
 Phenylthiolaminoacetophenone, *N*-4'-chloro-2'-nitro-, A., 1285.
 p -(Phenylthiolamino)benzyl alcohol, *p*-4-chloro-2-nitro-, A., 1285.
 Phenylthiolbenzylamine, 4-chloro-2-nitro-, A., 1285.
 β -Phenylthioldiphenylene-ethylene, β -chloro-, and its sulphide, A., 85.
 β -Phenylthiol- $\alpha\alpha$ -diphenylethylene, β -chloro-, sulphide of, and β -thiol-, A., 964.
 β -thiol-, isomerisation of, to phenyl diphenyldithioacetate, A., 1419.
 Phenylthioldiphenylmethyl salts, and *p*-chloro-*o*-nitro-, and *o*-nitro-, A., 218.
 β -Phenylthiol- $\alpha\alpha$ -diphenylvinylsulphenio acid, methyl ester, A., 964.
 Phenylthiolethylthiolmethane, A., 1394.
 Phenylthioglycine, *o*-nitro-, ethyl ester, A., 124.
 Phenylthiol-*dl*-leucine, *o*-nitro-, and *o*-nitro-*p*-chloro-, and their ethyl esters, A., 124.
 Phenylthiol-*dl*-leucylglycine, *o*-nitro-*p*-chloro-, and its methyl ester, A., 124.
 Phenylthiolmethyl chloride, *o*-nitro-, A., 218.
 Phenylthiolmethylamine, 4-chloro-2-nitro-, A., 1285.
 α -Phenylthiol- α -methylthiolethane, A., 1394.
 Phenylthiolmethylthiolmethane, A., 1394.
 Phenylthiol-*o*-nitrophenylthioldiphenylmethane, A., 218.
 N -Phenylthiol- N' -phenylbenzoquinone-di-imines, 4-chloro-2-nitro-, A., 1285.
 N -Phenylthiol- N' -phenylphenylenediamines, 4-chloro-2-nitro-, A., 1285.
 4-Phenylthiolphenyl styryl ketone, 4-*p*-nitro-, and its derivatives, A., 487.
 2-Phenylthiol-3-phenylthionaphthen, A., 964.
 Phenylthiol-*m*-4-xylydine, 5-bromo-*N*-4'-chloro-2'-nitro-, A., 1285.
 Phenyl 2'-thionaphthenyl ketone-2:3'-dicarboxylic acid, A., 1164.
 Phenyl thiosemicarbazidopropyl ketone, and its oxime, A., 487.
 1-Phenyl-3-*p*-tolyl-*d*²-1:2-diazene, and *p*-bromo- and *p*-nitro-, A., 1074.
 2-Phenyl-5-*o*-tolyl-4-methyl-1:2:3-triazole, A., 239.
 4-Phenyl-6-*p*-tolyl-2-pyridone, 3-cyano-, and its 1-methyl derivative, A., 235.
 6-Phenyl-4-*p*-tolyl-2-pyridone, and 3-cyano-, A., 235.
 4-Phenyl-6-*p*-tolyl-2-pyridone, A., 235.
 4-Phenyl-6-*p*-tolyl-2-pyridone-3-carboxylic acid, ethyl ester, A., 235.
 1-Phenyl-3-*m*-tolylthiocarbamide, *o*-amino-, A., 854.
 Phenyl- β -*p*-tolylthiolphenylethyl ketone, A., 1156.
 4-Phenyl-1:3:5-triazine, 2-amino-6-thiol-, and its salts and derivatives, A., 239.
 2-Phenyl-1:2:3-triazole-4:5-dicarboxylic acid, methyl ester, hydrazides of, and their dibenzylidene derivative, A., 632.
 2-Phenyl-4:2':4':5'-trimethoxybenzylideneoxazol-5-one, A., 484.
 Phenyltrimethylammonium mercuritriiodide, parachor and constitution of, A., 26.
 methanesulphonate and methosulphite, A., 463.
 10-Phenyltrimethylantracenes, A., 612, 1059.
 3-Phenyl-1:1:3-trimethylhydrindene, A., 945.
 β -Phenyl- $\beta\delta\delta$ -trimethylpentane-3:5-dicarboxylic acid, A., 946.
 Phenyl triphenylmethyl ketone, derivatives of, A., 221.
 Phenylundecic acids, and their derivatives, and *p*-hydroxy-, A., 1290.
 6-Phenyluracil, potassium salt and alkylation products of, A., 367.
 6-Phenyluracil-3-acetic acid, and its ethyl ester, A., 367.
 Phenylurazole, 3-imino-5-thiol-, silver salt and derivatives, A., 100.
 Phenylurethanes, *p*-amino-, acetyl derivatives, antipyretic action of, A., 1287.
 β -Phenylisovaleric acid, and its chloride, A., 946.
 β -Phenylvaleric acids, and the *l*-ethyl ester, A., 1413.
 Phenylxanthenium perchlorate, A., 1305.
 Phlobaphens, formation of, A., 964.
 Phloionic acid, A., 713, 1036.
 Phloionolic acid, A., 713, 1036.
 Phloracetophenone, condensation of, with piperonal, A., 1060.
 Phloridzin, A., 940.
 effect of, on glycogen distribution, A., 764.
 action of insulin and, A., 268.
 effect of, on milk secretion, A., 1322.
 Phloroglucinaldehyde, triacetyl derivative, A., 353.
 Phloroglucinol in vegetable products, B., 89.
 condensation of, with ethyl acetoacetates, to form coumarins, A., 962.
 benzylation of ketones derived from, A., 963.
 Phloroglucinol, *trinitro*-, crystal structure of, A., 551.
 Phloroglucinolecamphoreins, and their salts and derivatives, A., 359.
 Phonolites, leucitic and nephelitic, of Napu Is., A., 817.
Phormium tenax. See Flax, New Zealand.
 Phorone, intramolecular transformation of, A., 1374.
 Phosphatase, A., 654.
 specificity of, A., 520, 1089.
 relation between activity of sulphatase and, A., 1331.
 in blood and tissues, A., 1456.
 in tissues, action of irradiated ergosterol and of parathyroid hormone on, A., 129.
 rice, action of, A., 1098.
 plasma, A., 263.
 Phosphates. See under Phosphorus.
 Phosphate rock, constitution and citrate-solubility of, B., 756.
 properties of, B., 629.
 treatment of, (P.), B., 201, 489, 718, 882, 1092.
 dust control in grinding of, B., 18.
 concentration of, by flotation, (P.), B., 538.
 smelting of, in electric furnaces, (P.), B., 537.
 leaching of, (P.), B., 61, 1010, 1092.
 treatment of solutions from, (P.), B., 489.
 effect of, on calcium retention in pigs, A., 869.
 Chuvash, soluble phosphates from, B., 1091.
 ground, mechanical separates from, B., 1091.
 determination of phosphoric acid in, B., 717.
 Phosphatides, A., 111, 112, 115, 251, 1321.
 hydrophilic sols of, A., 908.
 as precursors of fat oxidation, A., 867.
 in cacao beans, B., 860.
 vegetable, A., 1199; (P.), B., 1073.
 determination of, in blood and tissues, A., 640.
 Phosphine. See Phosphorus trihydride.
 Phosphines, A., 809.
 tertiary, A., 637, 1404.
 Phospholipins, formation of, during autolysis of tissues, A., 252.
 Phosphomolybdic acid, reduction of, A., 1258.
 Phosphonates, A., 583.
 Phosphors, photo-electric effect in, A., 894.
 radiation from, in electric fields, A., 998.
 alkali halide, light emission by, A., 145.
 optical relationship of, with complex salt solutions, A., 545.
 quenching of, A., 893.

- Phosphors, aluminium oxide with platinum and with manganese, A., 1253.
 calcium oxide, A., 1210.
 potassium chloride-thallium, quenching of, A., 893.
 zinc sulphide, action of α -rays on, A., 1208.
- Phosphorescence in fused silica discharge tubes, A., 22.
- Phosphorescent bodies, apparatus for viewing of, (P.), B., 4.
 substances, A., 696, 1253.
 sulphides, A., 893.
- Phosphoric acid. See under Phosphorus.
- Phosphorites, fertilising action of, B., 215, 456, 821.
 effect of roasting on assimilability of, B., 1111.
 effect of gypsum on assimilability of phosphoric acid of, B., 987.
 effect of peat on utilisation of phosphoric acid of, B., 987.
 ignition of, A., 812.
 Estonian, decomposition of, B., 1137.
 Izjum, electro dialysis of, B., 245.
 Polish, value of, for fertilisers, B., 174.
- Phosphorus, production of, (P.), B., 632, 1010.
 and alumina, (P.), B., 925.
 and its pentoxide, (P.), B., 393.
 and its compounds with oxygen, (P.), B., 632.
 and utilisation of gases therefrom, (P.), B., 631.
 from Khibinsk apatite, B., 1138.
 allotropy of, A., 898.
 valency of, A., 1357.
 fluorescence and absorption spectrum of, A., 893.
 band spectrum of green flame of, A., 1103.
 magnetic susceptibility of, A., 788.
 influence of nitrogen peroxide on glowing of, A., 17.
 distillation of, from tricalcium phosphate, B., 537.
 oxidation of, and manufacture of soluble phosphates, B., 756.
 ionisation of air by, A., 285.
 effect of gases on oxidation of vapour of, A., 1014.
 autoxidation of, dissolved in carbon tetrachloride, A., 576.
 action of water vapour on, A., 436.
 production of stable solutions of, B., 88.
 distribution of, between cerebrospinal fluid and blood-serum, A., 508.
 effect of fibre in diet on retention of, A., 258.
 effect of, in rickets, A., 978.
 poisoning. See under Poisoning.
 detoxication of, by sugar, A., 1330.
 violet, crystal structure of, A., 671.
 white, calcifying action of "vitasterin" and, A., 532.
- Phosphorus alloys with copper, rolling of, B., 494.
 thermal conductivity of, A., 157.
- Phosphorus compounds, manufacture of, (P.), B., 439, 1010.
 equilibrium of, in hyperthermia, A., 519.
 oxygenated, reduction of, with hydrogen, A., 183.
- Phosphorus trichloride, molecular compound of, with *p*-benzene-azophenol, A., 613.
pentachloride, dielectric properties of, A., 669.
 reactions of, A., 947.
 co-ordination compounds of, A., 922.
tetrachlorobromide, structure of, A., 323.
trihydride (phosphine), occurrence of, in spring water, B., 744.
 structure of, A., 150.
 displacement of explosion limit of oxygen and, by ultra-violet light, A., 47.
 action of, on aluminium and beryllium halides, A., 583.
- trioxide*, ultra-violet band spectrum of, A., 1210.
pentoxide, production of, (P.), B., 882, 1048.
 concentration of, by submerged combustion, (P.), B., 535.
 determination of phosphorus trioxide in, with potassium permanganate, A., 587.
- oxychloride. See Phosphoryl chloride.
- Phosphorus acids, neutralisation curves of, A., 43.
 phosphoric acid, A., 193, 922.
 manufacture of, B., 717; (P.), B., 19, 488, 538, 718, 882, 1010, 1048.
 from phosphorites, B., 674.
 purification of, (P.), B., 757.
 clarification of, (P.), B., 630.
 dissociation of, A., 39.
 dissociation constant and activity coefficient of, A., 308.
 first dissociation constant of, in aqueous salt solutions, A., 1010.
 effect of adsorbent powders on solubility of, in ammonium citrate, B., 1047.
 precipitation of, with milk of lime, B., 1091.
- Phosphorus:—
 Phosphoric acid, action of, on metals and alloys, B., 844.
 corrosion of metals by, B., 495.
 use of, in preparation of ethylene, A., 193.
 in soils, B., 215.
 mobility of, B., 557.
 effect of, in accelerating maturity of sugar beet, B., 557.
 determination of, A., 1202; B., 970.
 colorimetrically, A., 586.
 by electrometric titration, A., 812.
 as molybdenum compounds, A., 186, 1258.
 by precipitation, A., 1258.
 volumetrically, A., 452, 700, 925.
 in feeding-stuffs, B., 87.
 in phosphate rock, B., 717.
 in plants and soils, colorimetrically, B., 174.
 in silicate rocks, A., 927.
- Phosphoric acids, ortho-, meta-, and pyro-, determination and separation of, A., 812.
- Phosphates, production of, from Khibinsk apatite, B., 802.
 concentration of material containing, (P.), B., 293.
 flotation concentration of ores containing, (P.), B., 925.
 molten, electrolysis of, A., 805.
 polymerisation and solubility of, B., 487.
 solubility of, in neutral ammonium citrate solution, B., 1047.
 dehydration of, B., 716.
 decomposition of, by sulphuric acid, B., 1009.
 behaviour of, in buffer mixtures, A., 565.
 availability of, as fertilisers, B., 174.
 biological reduction of, A., 266.
 acid, manufacture of, (P.), B., 293.
 apparatus for, (P.), B., 439.
 insoluble, treatment of, for use as fertilisers, (P.), B., 941.
 natural, recovery of iodine from, B., 246.
 finely divided, from Florida, composition of, B., 199.
 mechanical analysis of, B., 156.
 Rhenania, change in citrate-soluble phosphate in, B., 19.
 removal of, in analysis, A., 1142.
 analysis of, B., 60.
 detection of, in boiler-feed water, B., 865.
 determination of, A., 1258; B., 928.
 volumetrically, A., 55.
 in soils, B., 81, 557.
- Metaphosphates, hydration of, A., 1372.
- Hexafluorophosphates, structure of, A., 549.
- Phosphorous acid, action of nitric acid on, A., 1254.
- Hypophosphorous acid, action of sodium iodate on, A., 1373.
- Hypophosphites, determination of, by mercurimetric method, A., 326.
- Phosphides, heavy metal, A., 922.
 local detection of, on metal surfaces, B., 299.
- Phosphorus organic compounds in plants and animals, A., 1340.
- oxonium, A., 922.
- Phosphoric acid, esters, production of, during lactic fermentation, A., 266.
 manufacture of, containing halogen, (P.), B., 289.
- Phosphorous acid, esters, manufacture of, containing halogen, (P.), B., 289.
- Hypophosphoric acid, esters, A., 820, 1268.
- Pyrophosphoric acid, esters, A., 820, 1268.
- Pyrophosphorous acid, esters, A., 820, 1268.
- Phosphorus determination:—
 determination of, colorimetrically, A., 186, 1384.
 colour standards for, A., 1027.
 gravimetrically, A., 55.
 photometrically, in urine, A., 1323.
 spectrophotometrically, A., 662.
 with methyl-*p*-aminophenol, A., 1258.
 in blood and tissues, A., 506.
 in blood-serum, A., 377.
 in feeding-stuffs and cattle excreta, B., 652.
 nucleoprotein-, A., 1202.
 dissolved in oils, B., 307.
 in organic compounds, A., 856.
 in serum, A., 111, 974.
 in soils, B., 266.
 in steel, B., 928.
 in steel and cast iron, B., 297.
 in steel, alloy steels and cast iron, B., 845.
 in white sugars, B., 648.

- Phosphoryl chloride, manufacture of, (P.), B., 21, 157, 840.
molecular compound of, with *p*-benzeneazophenol, A., 613.
- Phosphotungstates, A., 338, 809.
- Phosphotungstic acid, recovery of, (P.), B., 1010.
- Photoanisotropy, A., 1250, 1378.
- Photochemical dissociation of triatomic molecules, A., 442.
equivalence law, applicability of, A., 920, 1138.
oxidation, A., 578; (P.), B., 1133.
polarisers, A., 442.
reactions, kinetics of, A., 441, 1135, 1136, 1251.
effect of light of different wave-lengths on, A., 694, 920.
energy-emission data for light for, A., 805.
effect of intensity of illumination on, A., 319.
compared with gas reactions, A., 1136.
temperature coefficients in, A., 1136.
studies, A., 442, 1378.
- Photochemistry of the associated state, A., 48.
on paper and glass, B., 783.
- Photoconductivity, relation between photovoltaic effect and, A., 1111.
- Photodichroism, A., 1250, 1378.
- Photodynamics, A., 1013.
- Photo-electric cells. See Cells, photo-electric.
currents, intense, generation of, (P.), B., 70.
devices, (P.), B., 726.
effect, A., 1106, 1206, 1212, 1347.
relativistic theory of, A., 1105.
in metals, A., 542.
of metals and salts, A., 278.
processes, A., 138.
- Photo-electrons, direction of emission of, A., 542.
longitudinal distribution of, A., 278.
counter for, A., 1206.
- Photographs, colour, production of, (P.), B., 276.
printing of, (P.), B., 276.
exposed, treatment of, with gaseous media, (P.), B., 418.
X-ray, graphic evaluation of, A., 788.
of fibres, A., 928.
- Photographic baths, chrome alum, properties of, B., 417.
coating, anti-abrasion, (P.), B., 91.
copies, with charcoal aspect, surfaces for production of, (P.), B., 91.
developers, depression of density caused by addition of bromide to, B., 464.
nuclei in, A., 1378.
anti-fogging agents in, B., 906.
and development, B., 743.
for motion picture films, B., 275.
cheap, A., 917.
determination of exhaustion of, B., 319.
emulsions, "speed" of, A., 1018.
variation of threshold speed of, B., 276.
size-frequency distribution of residual grains in, A., 580.
ripening of, A., 806.
sensitisation of, (P.), B., 994.
measurement of sensitivity of, B., 782.
changes in sensitivity of, after washing, B., 994.
fogging of, A., 1378.
action of low-speed electrons on, A., 920.
resistability of, (P.), B., 1155.
infection of, by bacteria, B., 366.
showing solarisation, B., 417.
for electronic discharge, (P.), B., 906.
disperse, A., 1250.
gelatin-silver halide, (P.), B., 91.
silver, ripening of, A., 579.
free silver in, B., 223.
silver bromide-gelatin, ripening of, B., 224.
silver chloride and bromide, ripening centres of, A., 48.
silver salt, production of, (P.), B., 276.
- etching, (P.), B., 1074.
- films, production of, on metal, wood, etc., (P.), B., 367.
relation between density, silver content, grain size and distribution of, A., 579.
desensitising action of light of high intensity on, B., 783.
cellulose ester composition for, (P.), B., 108.
dye-carrying layer for, (P.), B., 276.
colour, production of, (P.), B., 699, 743.
- Photographic films, roll, protective paper strips for, (P.), B., 906, 1074.
without protective paper slip, (P.), B., 91.
sensitised, production of, (P.), B., 417.
transparent, non-inflammable, (P.), B., 906.
films and plates, anti-halation layers for, (P.), B., 417.
formation of images on, (P.), B., 417.
gels, determination of silver in, B., 223.
images, production of, (P.), B., 699.
reproduction of, from lenticulated films, (P.), B., 368.
formation of, on cathodes of alkali-metal photo-electric cells, B., 566.
intensification of, by hydrogen peroxide, and organic peroxides, A., 1250.
in emulsions poor in silver, imparting printing capability to, (P.), B., 906.
diazotype, (P.), B., 1155.
latent, A., 319, 1137, 1250; B., 515.
theories of, A., 806.
influence of alkali halides on formation of, B., 367.
development of, B., 994.
on untreated paper, B., 1027.
relative masses of photo-silver and sensitivity specks in, B., 906.
silver, mordanting of, (P.), B., 367.
layers, preparation of, (P.), B., 907, 1074.
device for determination of gradation of blackenings in, (P.), B., 907.
containing basic dyes, fixing of, (P.), B., 907.
diazotype, manufacture of, (P.), B., 906.
exposed chromate-sensitised colloidal, treatment of, (P.), B., 91.
light-sensitive, (P.), B., 367, 743, 1074.
of varying sensitiveness, production of, (P.), B., 824.
materials, manufacture of, (P.), B., 906.
light-sensitive, (P.), B., 180, 1122.
negatives, production of prints from, with copying apparatus, (P.), B., 907.
development of, (P.), B., 1123.
negatives and prints, washing of, (P.), B., 319.
paper, (P.), B., 906.
pictures, coloured, production of, (P.), B., 824.
plates, preparation of, A., 805.
sensitivity of, A., 541.
effect of short electromagnetic waves on, A., 443.
wave-length and colour balance in, B., 906.
blackening of, A., 1378.
accumulation effect in, A., 442.
reduction of graininess of, B., 1074.
in liquids, electrical figures on, A., 896.
silver halides in, A., 1251.
sensitive, for red and infra-red, B., 566.
prints, production of, on chromated gel layers, (P.), B., 783.
fixing of, containing bleaching-out dyes, (P.), B., 417.
blue-, negative, solarisation phenomena in preparation of, B., 743.
diazotype, manufacture of, (P.), B., 907.
printing, B., 1027; (P.), B., 417, 1027, 1074.
automatic exposure control in, (P.), B., 464.
printing paper, cellulose, photochemical effect of *L*-rays on, A., 180.
printing plates, production of printing images on, (P.), B., 654.
metal, production of, (P.), B., 224*.
processes, (P.), B., 368.
reversal processes, (P.), B., 418.
reducers, B., 783.
screens, colour, (P.), B., 994.
sensitisation, A., 1137; B., 743.
sensitised bases, manufacture of, (P.), B., 276.
sensitisers, manufacture of, (P.), B., 1041, 1155.
lysine as, B., 224.
sensitivity, B., 1122.
effect of sodium sulphite on, B., 782.
sensitometry, precautions in, B., 1155.
amyl acetate in, B., 224.
surfaces, for bleaching-out process, manufacture of, (P.), B., 612.
toning, selenium, B., 276.
Photography, theory of, A., 1136.
light filters in, B., 224.
on copper, B., 515.

- Photography of X-ray images, (P.), B., 276.
 with polarised light, A., 1250.
 colour, (P.), B., 92, 566, 906, 1122, 1123.
 manufacture of films for, (P.), B., 417.
 production of corrected colour-selection positives for, (P.), B., 863.
 filter-screen supports for, (P.), B., 824.
 manufacture of light-sensitive layers for, (P.), B., 367.
 lens system for, (P.), B., 654.
 double-image prisms for testing in, (P.), B., 515.
 white-light prism device for, (P.), B., 276.
 printing in, (P.), B., 368.
 elimination of moiré effects in, (P.), B., 180.
 two-colour dye-impression, production of plates for, (P.), B., 367.
 Schlieren, applications of, A., 1264.
 ultra-violet, illuminator for, for determination of structure, A., 1263.
- Photogravures, (P.), B., 92.
 process for, (P.), B., 907.
- Photomechanical printing, (P.), B., 863, 947.
 screens for, (P.), B., 824.
 printing surfaces, (P.), B., 612, 907.
 production of screen-positives for, (P.), B., 824.
- Photometers, (P.), B., 3.
 integrating, for X-ray crystal analysis, A., 190.
 photochemical, direct-reading, (P.), B., 594.
 step-, A., 1257.
- Photometry, photographic, heterochromatic, A., 1212.
- Photomicrographs, A., 1387.
- Photons, spin of, A., 995, 1205.
- Photophoresis, electro- and magneto-, A., 410.
- Photosensitisation, nature of active radiations in, A., 389.
- Photosensitivity and the periodic system, A., 805.
- Photosynthesis, mechanism of, A., 634.
 catalysts for, A., 1138.
 in sunshine in polar regions, A., 694.
 in tropical sunlight, A., 920, 1138.
 on the shores of the Black sea, A., 694.
- Phrynolysin, A., 252.
- Phrynosoma cornutum* (horned lizard), suffocation point of, A., 980.
- m*-Phthalaldehyde 1-phenyl- and 1-*o*-tolyl-carbohydrazones, A., 475.
- Phthalamic acid *N*-acetamide, A., 727.
- Phthalazone, 4'-hydroxy-. See Phthalylhydrazide.
- Phthaleins, colour changes of, A., 956, 1292.
- Phthaleinoscope, applications of, B., 517.
- Phthalhydrazides, and 6-nitro-, constitution of, A., 727.
- Phthalic acid, equilibrium of, with potassium phthalate and water, A., 1365.
 brucine β -methylenebutyl, cinnamyl hydrogen and ethylvinyl-carbinyl hydrogen esters, A., 1393.
 ethyl ester, toxicity of, A., 119.
 determination of, in ethyl alcohol, B., 963.
 hydrogen esters, manufacture of multivalent metal salts of, (P.), B., 667.
d- α -phenyl-*n*-propyl hydrogen ester, A., 85.
- Phthalic acid, dibromo-, A., 355.
 3:4-dibromo-, and its anhydride, A., 215.
 3-bromo-6-fluoro-, A., 949.
 4-chloro-derivatives, production of, (P.), B., 834.
 3-nitro-, derivatives of, A., 841.
 3:5-dinitro-, condensation of, with toluene, A., 1420.
- Phthalic anhydride, manufacture of, (P.), B., 1003.
 reaction of, with α -aminoazo-compounds, A., 744.
 compounds of ethyl orthotitanate with, B., 675.
 condensation of, with β -naphthol, A., 1292.
 sulphonation of, A., 1055.
 production of halogen derivatives of, (P.), B., 753.
- Phthalide, condensation of, with aromatic compounds, A., 225.
- Phthalide, amino-, and its derivatives, 4-cyano-, 4-halogeno-, and 4-hydroxy-, and its acetyl derivative, A., 727.
 3-chloro- α -hydroxy-, and its formation from 3-chloro-*o*-toluic acid, A., 220.
- Phthalide-4-carboxylic acid, and its derivatives, A., 727.
- Phthalidobenzoic acid, ethyl ester, A., 220.
- Phthalimide, 4-amino-, acetyl derivative, and 4-nitro-, preparation of, A., 351.
- Phthalimide-*N*-carboxylic acid, ethyl ester, and its reaction with hydroxylamine, A., 619.
- Phthalimidoacetic acid, and dibromo-, mono-, di-, and tetra-chloro-, and nitro-, and their derivatives, A., 727.
- Phthalimidoacetoneitriles, synthesis of, A., 727.
- Phthalimidoauric acid, sodium salt, A., 1172.
- γ -Phthalimidobutyrothioamide, A., 748.
- 2- β -Phthalimidoethyl-4-(3':4'-dihydroxyphenyl)thiazole, A., 748.
- α -Phthalimido-*n*-hexane, A., 942.
- γ -Phthalimido- β -hydroxypropylpyridylum chloride, and its salts and betaine, A., 1428.
- γ -Phthalimido- β -hydroxypropylquinolylium chlorides, and their salts, A., 1428.
- Phthalimidomethoxymethylmalonic acid, and its silver salt and derivatives, A., 205.
- 4-Phthalimidomethyl-2-*p*-anisylthiazole, A., 103.
- 3-Phthalimidomethylanthraquinone, 1:2-dihydroxy-, A., 226.
- 4-Phthalimidomethyl-2-phenylthiazole, A., 103.
- 4-Phthalimidophthalimide, A., 351.
- β -Phthalimidopropionic acid, derivatives of, A., 748.
- 2- γ -Phthalimidopropyl-4-(3':4'-dihydroxyphenyl)thiazole, A., 748.
- o*-Phthaloyl chlorides, preparation of, A., 841.
 action of, on phenyl and thiophenyl acetates, A., 1292.
- 6:7-Phthaloylacidones, halogenated, manufacture of, (P.), B., 712.
- Phthaloylhydroxylamine, and its salts and derivatives, A., 619.
- Phthalyl chloride, action of hydrogen sulphide on, A., 88.
 molecular compound of, with *p*-benzeneazophenol, A., 613.
 diurethane, 3-nitro-, A., 830.
- Phthalylhydrazide, and its derivatives, constitution of, A., 744.
- 1:8-Phthalyl- β -naphthol, and its derivatives, A., 1060.
- 3:4-Phthalylphenanthrene, A., 1283.
- Phthalylsulfonic acid, and its methyl ester, A., 491.
- Phycocyan, A., 884.
- Phycocerythrin, A., 884.
- Phycomyces blakesleanus*, growth and zygote formation in, A., 1458.
- Phycomyces*, phototropic sensitivity of, A., 1091.
- Phyllobombycin, and its derivatives, A., 966.
- Phyllochlorin, methyl ester of, A., 369.
- Phylloleucin, constitution of, A., 960.
 dimethyl ether, synthesis of, A., 960.
- Phylloerythrin, and its derivatives, A., 496.
 formation of, from phosphoribide, A., 102.
 in herbivora, A., 1185.
 iron salt, A., 1432.
 esters of, A., 247.
- ψ -Phylloerythrin, and its derivatives, A., 496.
- Phylloporphyrin, A., 1075.
- Phyllostachys quilloi* (Madake), composition of, A., 130.
- Phymatotrichum*, effect of soil-reaction on, B., 559.
- Physalien, A., 1066.
- Physics, application of, in inorganic chemical industry, B., 47.
- Physico-chemical constants, determination of, A., 787.
- Physiological action and chemical constitution, A., 650, 764, 1190.
- Physodalic acid, A., 1297.
- Phytin, absorption and retention of calcium chloride and, A., 1327.
- Phytoplankton, swarming of, in ponds, A., 1448.
- Phytosterolin, isolation of, from wheat embryo, and its salts, A., 606.
- Picea sitchensis*, leaf oil from, B., 416.
- Picene, B., 274.
 and its hydrochloride, B., 416.
- α -Picoline, condensation of, with diethylamine, A., 965.
 hydrogenation of catalytically, under pressure, A., 494.
- α -Picoline, 3-hydroxy-, manufacture of, (P.), B., 13.
- Picolinic acid, *d*- β -octyl and *l*-menthyl esters, A., 965.
- Picolinoxydiethylamide, A., 740.
- N*-Picolinylanthranilic acid, and its methyl ester, A., 363.
- Pieramic acid, preparation of, A., 212.
- Picric acid, solubility of, in mixed solvents, A., 794.
 and its naphthalene ester, solubility of, A., 901.
 perylene compounds of, A., 1045.
- piperidine salt, A., 630.
- 4-hydroxy-2:2:6-trimethylpiperidine ester, A., 629.
 determination of, A., 107.
- Picryl-2-methoxynaphthalene, 1-thio-, A., 724.
- Piezoelectric crystals, A., 29.
 manufacture of, (P.), B., 893.
- Pigs, animal and plant proteins in feeding of, B., 735.
 buckwheat middlings in feeding of, B., 1120.
 dried buttermilk for feeding of, B., 1025.

- Pigs**, soya beans and soya-bean oil meal for, B., 176.
 substitution of soya beans for tankage in feeding-stuffs for, B., 1070.
 food values of tapioca flour and sago-pith meal for, B., 943.
 influence of diet on body-fat of, A., 257.
 black gut in, A., 1177.
- Pigeons**, glutathione content of muscles and organs of, A., 860.
 effect of rest and exercise on lactic acid content of organs of, A., 1337.
 proteins in flesh of, A., 1442.
- Pigments**, manufacture of, B., 403; (P.), B., 127.
 treatment of, (P.), B., 984.
 grinders for, (P.), B., 615.
 optical and X-ray investigations on, B., 983.
 determination of specific gravity of, B., 553.
 selective adsorption by, B., 33.
 absorption of organic liquids by, B., 126.
 dispersion of, B., 1106.
 manufacture of azo-dyes for, (P.), B., 580.
 qualities of, for linoleum, B., 126.
 microchemical investigation of, in paintings, B., 72.
 colorimetry of, and scale of fastness, B., 403.
 for painting or staining, (P.), B., 642.
 with insecticidal and fungicidal properties, manufacture of, (P.), B., 261.
 antimony yellow, B., 552.
 black, manufacture of, (P.), B., 404.
 cadmium, in cellulose lacquers, B., 126.
 coloured, staining power of, B., 851.
 micrography of, B., 33, 169.
 dry, incorporation of, B., 1062.
 mixed crystal, manufacture of, (P.), B., 404.
 ferric oxide, structure of, A., 564.
 inert, production of, (P.), B., 818.
 inorganic basic, reaction of, with linseed oil, B., 356.
 iron oxide, B., 1106.
 lead, manufacture of, (P.), B., 129*.
 poisonous action of, B., 768.
 lead chromate, hydrogen-ion concentration and colour of, B., 597.
 metallic oxide, (P.), B., 686.
 mineral, refining of, (P.), B., 503.
 organic, for rubber, B., 406.
 titanium, production of, (P.), B., 597.
 composite, (P.), B., 642.
 determination of iron in, B., 1106.
 titanium dioxide, production of, (P.), B., 357.
 reduction of oil absorption of, (P.), B., 936.
 titanium white, manufacture of, (P.), B., 642.
 white, (P.), B., 686.
 luminescence of, B., 403.
 zinc sulphide, production of, (P.), B., 357.
- Pilchard oils**, B., 450.
- Pilocarpine**, effect of, and sugar on blood-amylase, A., 764.
 on blood-lipase in children, A., 764.
 on blood-sugar and on uterus in rabbits, A., 1328.
 on non-protein-nitrogen in, A., 764.
- dl*-**Pilopic acid**, synthesis of, A., 962.
- Pimanthrene**, constitution of, A., 360.
- Pimelic acid**, ethyl ester, preparation of, A., 822.
- Pimento pepper**, effect of, on poultry, A., 389.
- Pinabietic acid**, formation of, from Canada balsam, A., 1297.
 hydrobromide, A., 94.
- Pinacol**, anhydrous, preparation of, A., 333.
 methylene ether, A., 1047.
- Pine**, constituents of yellow buds of, A., 885.
 pollen membranes of, A., 536.
 terebenthene from, B., 212.
 turpentine from, B., 895.
 jack. See *Pinus banksiana*.
 maritime, bleaching of pulp from, B., 800.
 soluble tars from, B., 467.
- Pine flax**, yellow. See *Linum neomexicanum*.
- Pine gum**, American and French, comparison of, and of rosins and turpentines therefrom, B., 1146.
- Pine oil**, production of, from materials rich in oleoresin, (P.), B., 984.
 production of drying oil from, (P.), B., 935.
 production of turpentine substitute and borneol from, (P.), B., 309.
 separation of anethole from, (P.), B., 554.
- Pine oil**, separation of oxygenated components from, (P.), B., 309.
 use of, in cellulose industry, B., 876.
 Philippine, B., 1074.
- Pine-tar oil** for orchard and garden use, B., 989.
- Pine wood**, B., 196.
 action of catalysts on distillation of, B., 186.
 lignin content of, B., 15.
 mercaptolysis of, B., 339.
- Pineapples**, control of soft rot caused by *Theilaviopsis paradoxa* in, B., 1068.
- Pineapple industry**, B., 462.
- Pinene**, and its derivatives, A., 230.
 Raman effect of, A., 145.
 isomerisation of, in presence of alumina, A., 1422.
 hydration of, A., 175.
 reactions of, and its dichloride, A., 231.
- α -**Pinene**, action of sulphur on, A., 95.
 derivatives in Spanish turpentine, B., 1106.
- Pinenes**, compounds of, with hydroferrocyanic acid, A., 736.
- α -**Pinenes**, optically active, A., 625.
- Pinocamphor oxime**, crystal structure of, A., 550.
- Pinol glycol**, crystal structure of, A., 550.
- Pinonic acid**, derivatives of, A., 231.
 oximo, crystal structure of, A., 556.
- Pinisylvic acid**, and its salts and tetrabromide, A., 94, 492.
- Pinus banksiana* (jack pine), resins in, B., 403.
- Pinus caribaea*, ether extractive of, B., 1096.
- Pinus insularis*, Philippine rosin from, B., 935.
 needle oil from, B., 1074.
 turpentine from, B., 768.
- Pinus monticola*, oils from leaves of, B., 274.
- Pinus palustris*, isolation of arabinogalactan from, A., 716.
- Pinus pinaster*, Spanish turpentine from, B., 1106.
- Pinus sylvestris*, composition of turpentines from, B., 259.
 turpentine oil from, B., 402.
- Pipes**, distribution of heat flow about circumference of, in a stream of fluid, B., 949.
 chemical characteristics of cement linings of, B., 65.
 corrosion of, B., 116.
 pickling of, B., 116.
 bituminous covering for, (P.), B., 1001.
 heat-insulating casings for, B., 518.
 protective coating of, (P.), B., 765.
 relation between pinholes, electrical conductivity and protective value of coatings for, B., 977.
 metal. See Metal pipes.
- Piperazine**, reciprocal reaction between propylene oxide and, A., 851.
 derivatives, containing sulphur, antipyretic action of, A., 388.
 hydrate, molybdenum and tungsten sulphide compounds of, A., 1071.
- Piperazines**, substituted, isolation and synthesis of, A., 1430.
- Piperidine**, manufacture of, (P.), B., 711.
 viscosity of mixtures of ethyl acetate and, A., 32.
 action of, on acetone semicarbazone, A., 850.
 with organic halides, A., 494.
 with sulphonates and sulphonamides, A., 629.
 salts of, with molybdenum and tungsten sulphides, A., 1071.
 derivatives, A., 1071.
 as accelerators for vulcanisation of rubber, B., 769.
 production of hydrogenated derivatives of, (P.), B., 179.
 determination of, in a mixture of pyridine and its homologues, A., 375.
- Piperidinoanthraquinone-6-sulphonic acid**, A., 1062.
- 10-Piperidino-9-benzylidene-1:4-dimethyl-9:10-dihydroanthracene**, A., 341.
- 1- α -Piperidinobenzyl- β -naphthols**, and their camphorsulphonate, A., 362.
- 2-Piperidino-3:4-dihydronaphthalene**, and its picrate, A., 214.
- 10-Piperidinodimethylantrones**, A., 341, 612, 1058.
- 10-Piperidino-1:5-diphenoxanthrone**, A., 225.
- 4-Piperidinodiphenyl, 4'-fluoro-2-nitro-**, A., 947.
- ϵ -Piperidinoformylcarbohydrazide**, and its salts, A., 850.
- Piperidinoformylhydrazide hydrochloride**, A., 850.
- 2-Piperidino-1-methoxy-1:2:3:4-tetrahydronaphthalene**, and its salts, A., 214.
- 10-Piperidino-2-methylantrone**, A., 1058.
- Piperidinomethylcarbinol hydrochlorides**, A., 850.
- 2-Piperidinomethyl-2-hydroxytetrahydronaphthalene**, A., 1052.
- 2-Piperidinomethylquinoline, 3-chloro-4-hydroxy-**, A., 236.

- 2-Piperidinoquinoline methiodide, A., 751.
ms-Piperidinotetrahydroacridine, A., 495.
 β -Piperidino- α -*ary*-tetraphenylpropyl alcohol, and its chloride hydrochloride, A., 850.
 β -Piperidino- α -*ary*-triphenylpropyl alcohol, A., 850.
 2-Piperidone, salts of, A., 1306.
 4-Piperidone, derivatives of, A., 1071.
 ω -1-Piperidylanisyl-2-hydroxynaphthylmethane, A., 723.
N-Piperidylhydantoin-3-acetamide, A., 966.
 2-(2'-Piperidyl)-1-methylpyrrolidine, and its picrate, A., 1431.
 ω -1-Piperidylphenyl-1-hydroxy-2-naphthylmethane, A., 723.
 2-Piperidyl-2-pyridine, A., 498.
 (2'-Piperidyl)pyrroles, and their derivatives, A., 1431.
 2-(2'-Piperidyl)pyrrolidine, and its picrate, A., 1431.
N-Piperidyl*di*thiocarbamic acid, nitroso-, cobalt salt, A., 1427.
 Piperine, and its products, detection of, in plants, A., 778.
 Piperitols, synthesis of, A., 230.
 Piperitolenic acid, constitution of, and its methyl ester and oxidation derivatives, A., 1421.
 Piperitone, A., 230.
 photopolymerisation of, and its semicarbazone, A., 95.
 autoxidation of, and its derivatives, A., 1421.
 in alkaline solution, A., 94.
 Piperitylamines, synthesis of, and their salts and derivatives, A., 230.
dl-Piperityltrimethylammonium iodide, A., 230.
 Piperonal (*piperonaldehyde*), action of diazomethane on, A., 731.
 condensation of, with phloracetophenone, A., 1060.
 nitrobenzene sulphonhydrazones, A., 610.
 2:4-*di*nitrophenylhydrazones, A., 937.
 Piperonal-6-arsinic acid, and its semicarbazone, A., 751.
 Piperonylethane, 6-nitro-, A., 731.
 Piperonylacetone, 6-nitro-, and its semicarbazone, A., 731.
 Piperonyl benzyl ketone, and its oximes, A., 732.
 Piperonyl *o*-chlorobenzyl ketone, and its *anti*-oxime, A., 732.
 2-Piperonyl-4-chloromethylthiazole, A., 103.
 Piperonylethylene oxide, 6-nitro-, and its derivatives, A., 731.
 Piperonylhomopiperonylamine, salts of, A., 1048.
 Piperonylhomoveratrylamine, A., 1048.
 Piperonyl-3:4-*di*hydroxy- β -phenylethylamine, A., 1048.
 Piperonylic acid, 6-nitro-, A., 731.
 ω -Piperonylideneacetanilide, ω -cyano-, A., 237.
 Piperonylidenebenzamidoacetanilide, 6-nitro-, A., 743.
 Piperonylidenebenzamidoacetatoluidides, and 6-nitro-, A., 743.
 Piperonylidenebis(*di*hydro- β -naphthafuran-1-one), A., 737.
 Piperonylidenedihydro- β -naphthafuran-1-one, A., 737.
 Piperonylidenehomo-piperonylamine and -veratrylamine, A., 1048.
 ω -Piperonylidene-8-hydroxy-5-quinolyl methyl ketone, A., 741.
 Piperonylidene-malonanilic acid, *o*-nitro-, A., 1155.
 Piperonyl methyl ketone, 6-nitro-, and its semicarbazone, A., 731.
 Pipettes for micro-filtration, A., 705.
 for removal of supernatant liquids, A., 705.
 slow combustion, A., 705.
 for gas analysis, A., 330.
 consistency, for control of enamel slips, B., 64.
 syringe, A., 1204.
 Piria reaction, A., 720.
 Pistons, light-metal, production of, (P.), B., 932.
 Pitch, composition of, (P.), B., 433.
 coking of, (P.), B., 102, 1130.
 impregnation of fibrous materials with, (P.), B., 351.
 manufacture of dispersions of bitumen and, (P.), B., 379.
 stearine, evaluation of, B., 595.
 fluorescence analysis of, B., 468.
 determination of wax in, B., 142.
 Pitocin, effect of, on calcium, phosphorus and sugar in blood, A., 657.
 on blood-phosphatides, A., 397.
 Pitressin, effect of, on basal metabolism, A., 657.
 on blood-phosphatides, A., 397.
 on calcium, phosphorus, and sugar in blood, A., 657.
 Pituitary extracts, effect of, on water and halides in blood and urine, A., 987.
 on blood-sugar, A., 1461.
 on uterine muscle, A., 269.
 anterior, relation between gonads and, A., 527.
 effect of, on liver, A., 878.
 effect of, on basal gaseous metabolism of rats, A., 878.
 posterior, oxytocic activity of, A., 1195.
 Pituitary gland, preparation of active substances from, A., 126.
 growth-promoting hormone from, A., 268.
 properties and stability of active powder from anterior lobe of, A., 1337.
 gonad-stimulating hormone from anterior lobe of, A., 1337.
 growth-promoting substance from anterior lobe of, A., 397.
 manufacture of hormone from anterior lobe of, (P.), B., 417.
 preparations of posterior lobe of, A., 878.
 influence of hormones of, on basal metabolism, A., 657.
 iodine content of commercial preparations of, A., 1321.
 Pituitrin, effect of, on basal metabolism, A., 657.
 on lipins of blood, A., 527.
 on blood-phosphatides, A., 397.
 on glycogen distribution, A., 764.
 on ions excreted in urine, A., 527.
 Placenta, choline in, A., 1442.
 ovary-stimulating hormone of, A., 398.
 human, toxicity of, for rabbits, A., 379.
 Plagioclase, acid, determination of, A., 1390.
 Plagiostomes. See *Scylliorhinus canicula*.
 Planets, greater, infra-red absorption spectra of, A., 277.
Planorbis corneus, respiration and haemoglobin function in, A., 1439.
 Plant, chemical, power economy in, B., 613.
 timing device for, (P.), B., 999.
 acid-resisting materials for, B., 909.
 metals for, for high-temperature, B., 117.
 welding of monel metal for, B., 887.
 Plants, structure of, in relation to soil and light, A., 1466.
 chemistry of, A., 1101.
 microscopy and histochemistry of fruits and leaves of, A., 885.
 effect of water supply on distribution of, B., 1110.
 effect of salts on geotropy of, A., 775.
 and leguminous bacteria, A., 1101.
 moisture equilibrium and nutrition of, A., 535.
 nutrition of, A., 399, 1201.
 absorption by, A., 1466.
 absorption of nutrients by, B., 38.
 absorption of ammonium- and nitrate-nitrogen by, B., 603.
 influence of, on soil water and nutrients, B., 175.
 influence of dry soil on extension of roots of, B., 989.
 exchangeable cations of soils and, B., 856.
 effect of reducing substances in roots of, on their development in nutrient solutions containing nitrates, B., 989.
 diagnosis of soil nutrient deficiency from symptoms of, B., 1113.
 fertiliser requirements of, A., 1200.
 movement of gases in and through, A., 1466.
 hydrogen-ion concentration in, A., 272.
 effect of ammonium salts on, A., 775.
 effect of p_H of nutrient solutions on reactions of, A., 775.
 effect of p_H on reaction of potassium salts to, B., 456.
 action of light and temperature on assimilation by, A., 272.
 respiration in, A., 1189.
 growth of, B., 987.
 under Vitaglass, B., 1113.
 relation of composition of soil solutions to, B., 689.
 and acidity of soil, B., 558, 602.
 effect of soil moisture on, A., 1339.
 effect of ammonia solution fertilisers on, B., 215.
 effect of copper on, B., 733.
 effect of iodine on, A., 1200.
 effect of increasing quantities of nitrogen on, A., 660.
 glutathione in relation to growth and tumours of, A., 989.
 action of ovarian hormone on, A., 1337.
 production of alkaloids in, after injection of colloidal iron, A., 1340.
 toxic action of aluminium on, B., 604.
 colloids of, A., 941, 1124, 1198, 1277.
 colouring matters of, A., 597, 1267, 1299, 1305, 1340.
 relation between, and physiological phenomena, A., 660.
 diastatic and peroxidative activity of, A., 400.
 hydrocyanic acid in, A., 401, 944.
 iodine-absorbing material in, A., 273.
 effect of iodides, iodates, and periodates on germination of, A., 1099.
 relation of p_H of tissue fluids to distribution of iron in, A., 775.
 influence of calcium on the function of magnesium in, A., 774.
 physiology of mineral elements in, A., 1200, 1466.

- Plants, intake, accumulation, and transformation of nitrates by,** B., 175.
 effect of nitrate fertilisers on stomata of, A., 534.
 formation of oil in, A., 535.
 movement of organic materials in, A., 774.
 oxidoreductases of, A., 1189.
 phosphate requirements of, B., 83.
 intake of phosphates by, B., 1111.
 effect of manuring on absorption of phosphate and lime by, B., 81.
 water-soluble phosphatides in, A., 1340.
 absorption and utilisation of phosphoric acid by, B., 733.
 assimilation of phosphorites by, B., 1111.
 rôle of phosphorus in, A., 1466.
 effect of fertilisers on phosphorus content of, B., 647.
 phosphorus and sulphur in nutrition of, A., 1340.
 effect of potash shale on, B., 38.
 absorption and utilisation of potassium by, B., 647.
 effect of potassium deficiency on structure and constituents of, A., 273.
 effect of potassium on sugar in, A., 133.
 potassium isotopes in, A., 1342.
 proteases of, A., 393.
 proteins of, A., 401.
 radium and thorium in, A., 774.
 distribution of saponin in, A., 400.
 sodium in, B., 409.
 effect of ultra-violet light on vitamin-D in, A., 1098.
 stimulants for, (P.), B., 1150.
 forcing of, A., 660.
 determination of winter hardiness of, B., 558.
 colour changes of, in desiccation, A., 274.
 disinfectants for, (P.), B., 559.
- Plants, annual, production of cellulose from, (P.), B., 479.**
 crop, drought-resistance in, A., 534.
 cultivated, rate of production of components in, A., 660.
 acidity of cell sap of, A., 884.
 economic, permeability of, to iodine, A., 774.
 flowering, carbohydrate content of nectar of, A., 273.
 foliate, decortication of, (P.), B., 673.
 fossil, preparation of cellulose films of, A., 886.
 green, changes in nitrogen of, B., 821.
 ensilage of, B., 605.
 cultivated and wild, relation of composition of, to decomposition of nitrogenous constituents, B., 820.
 higher, effect of ultra-violet light on, A., 401.
 chemical stimulation of, B., 457.
 translocation of materials in, A., 1099.
 carbohydrate metabolism of, A., 391.
 action of hydrogen and sulphides on, B., 1023.
 accumulation of nitrates in, A., 130.
 nitrates and ammonium salts as sources of nitrogen for, B., 1022.
 nitrites as source of nitrogen for, B., 989.
 nitrogenous bases in, A., 990.
 nitrogen metabolism in, A., 660.
 urea and ureides in, A., 990.
 green, necessity of copper for, A., 1201.
 leguminous, nodule bacteria on, A., 660.
 fixation of nitrogen by, B., 1149.
 oil, heat treatment of, (P.), B., 211.
 Oregon, phytochemistry of, A., 536.
 seedling, free-ammonia injury of, with concentrated fertilisers, B., 215.
 fluorescence analysis of, A., 402.
 silicic acid in analysis of, B., 132.
 detection of alkaloids in, A., 243, 639, 778.
 detection of choline in, A., 778.
 detection of cytosine in, A., 243.
 detection of fluorine in, B., 506.
 determination of acid-base balance in ash of, A., 133.
 determination of dissolved carbon dioxide in sap of, A., 532.
 determination of oxygen during photosynthesis in, A., 660.
- Plant cells, chemistry of walls of, A., 883.**
 permeability of walls of, A., 534.
 preparation of skeletal substances from walls of, with chlorine dioxide, A., 1101.
 composition and synthesis of membranes of, A., 776.
 diffusion of solutes through membranes of, A., 534.
 accumulation of electrolytes in, A., 129.
- Plant cells, thermodynamics of ion concentration in, A., 534.**
 calcareous and siliceous substances in, A., 1101.
 influence of heavy-metal salts on, A., 1466.
 hemicellulose in, A., 776.
- Plant extracts, evaporation of alcohol from, A., 778.**
 distribution of nitrogen in, A., 661.
 alcoholic, changes in, B., 268.
 determination of amide-nitrogen in, A., 537.
- Plant juices, effect of frost on, A., 1198, 1465.**
 Plant materials, biological decomposition of, A., 1460.
- Plant sap, carbohydrates of, A., 1342.**
 p_H and phosphorus content of, A., 1201.
- Plant scale, San José, control of, in Pacific Northwest, B., 1113.**
 Plant tissues, swelling and shrinkage of, in toxic solutions, A., 537.
 fluids of, A., 1102, 1201.
 effect of pre-treatment with salt solutions on diffusion of electrolytes from, A., 1466.
 decomposition of, by cultures of fungi and bacteria, A., 1333.
 absorption of ammonia and nitrates by, A., 1200.
 action of bromine on, A., 1098.
 metachromatic coloration of, by organic dyes, A., 402.
 preservation of, by hydroxyquinoline sulphate, A., 402.
 variations of "Og" of, A., 884.
 cambial, and their staining, A., 399.
 determination of pentosans in, A., 885.
- Plantain, vitamin-B in, A., 1464.**
- Plasma, mineral matter and dextrose in, A., 754.**
 proteins, protein-carbohydrate complexes from, A., 247.
 dog's, low phospholipins in, A., 754.
- Plaster, manufacture of, (P.), B., 975, 1052.**
 from by-product calcium sulphate, (P.), B., 397.
 preparation of by-product calcium sulphate for, (P.), B., 201.
- Plasters, adhesive, (P.), B., 742.**
- Plaster moulds, effect of organic compounds on life of, B., 440.**
- Plastics, production of, (P.), B., 462.**
 flow of, A., 564.
 pseudo-, thixotropy of, A., 797.
- Plastic compositions, manufacture of, (P.), B., 598, 1147.**
 from cellulose acetate and others, (P.), B., 643.
 from cellulose derivatives, (P.), B., 109, 128.
 treatment of filling materials used in, (P.), B., 819.
 fibrous, (P.), B., 936.
 insoluble, production of, from alginic acid, (P.), B., 676.
- Plastic masses, manufacture of, (P.), B., 128.**
 production of variegations in, (P.), B., 729.
 treatment of articles made from, (P.), B., 936.
 dispersed, (P.), B., 407.
 clastic, (P.), B., 600.
- Plastic materials, (P.), B., 769.**
 manufacture of, (P.), B., 729, 936.
 from artificial wood pulp, (P.), B., 671.
 treatment of, (P.), B., 287.
 drying apparatus for, (P.), B., 278.
 softeners for, (P.), B., 729.
 influence of proximity of solid wall on consistency of, B., 825.
 manufacture of continuous lengths of, (P.), B., 503.
 manufacture of objects from, (P.), B., 540.
 manufacture of perforated articles from, (P.), B., 985.
 nitrocellulose, manufacture of, (P.), B., 769.
- Plastic preparations, manufacture of, (P.), B., 289, 290.**
- Plasticity, definition of, and its measurement, B., 321.**
 determination of, (P.), B., 869.
 relation between elasticity toughness, brittleness, and, B., 949, 950.
 of solid-liquid systems in relation to degree of wetting, A., 797.
- Plastometer, B., 281.**
- Platinum, spectrum of, A., 8.**
 X-ray spectrum of, A., 3.
 positive ion emission from thin films of, on glass, A., 542.
 potential of, in hydrazine solutions, A., 449.
 cathode sputtering and deposition of, A., 329.
 effect of metals on secondary emission from, A., 888.
 electrochemistry of, in hydrochloric acid, A., 914.
 magnetic states of, A., 673, 791, 1357.
 desorption of hydrogen and oxygen from, as result of ionisation, A., 903.
 influence of hydrogen sulphide on adsorption of hydrogen by, A., 1120.
 determination of melting point of, A., 189.

- Platinum, freezing point of, A., 1004.
 poisoning of, on charcoal, A., 34.
 thermal decomposition of propaldehyde on, A., 1248.
 catalytic, B., 495.
 colloidal, exchange of ions at surfaces of, A., 298.
 behaviour of as acidoid sol, A., 303.
 smooth and platinised, anodic polarisation of, A., 1371.
 sputtered, crystal structure of, A., 548.
 univalent, A., 53.
 pyrognostic assay of, A., 814.
- Platinum alloys, determination of melting point of, A., 59.
 magnetic, structure of, A., 1364.
 with cobalt, magnetic properties of, A., 155.
- Platinum bases (*platinumamines*), complex, A., 810.
 optically active, A., 924, 1167.
- Platinum salts, complex, absorption spectra of, A., 891.
 Platinous salts, stereochemistry of, A., 698.
 Chloroplatinic acid, electrolytic reduction of, in hydrochloric acid, A., 194.
 reaction between alkali phosphates and, in ammoniacal solution, A., 1256.
- Halogenoplatinates, stabilities of, A., 54.
- Platinum determination:—
 determination of, by potentiometric titration, A., 814.
 microchemically, in alloys, B., 722.
 in its ores, B., 117.
- Platinum black, adsorption of organic acids by, A., 420.
- Platinum filaments, hot, reactions of gases at surface of, A., 576.
 barium oxide-coated, photo-electric effect from, A., 785.
- Platinum metals, occurrence of, in the earth's crust, A., 1266.
 electrodeposition of, (P.), B., 593.
 magnetic susceptibility and ionic moments of, A., 411.
 adsorption of hydrogen by, A., 678.
 arsenides of, A., 1022.
- Platinum ores, Transvaal, determination of precious metals in, B., 763.
- Platinum wire, cold-working of, A., 1001.
- Plumbagin, absorption spectrum of, A., 892.
- Pneumococcus, oxidation-reduction potentials of cultures of, A., 526.
 immunological relationships of, A., 986.
 type-specific polysaccharides from, A., 267, 1335.
 metabolism of *S* and *R* terms of, A., 1335.
- Pneumonia, metabolism in, A., 1325.
- Pneumonoconiosis, serum-calcium in, A., 383.
- Podophyllum*, assay of resin from, B., 993.
 American and Indian, crude fibre and resins in rhizomes of, and adulteration with guaiacum wood, B., 742.
- Poisons, manufacture of, for destroying animals, (P.), B., 464.
 distribution of, in tissues, A., 870.
 reaction of medium in action of, A., 388.
 effect of dilution on lethal properties of, A., 1086.
 sensitivity of white mice to, A., 121, 122.
 amyostatic, A., 764.
 cobra, neutralising value of anti-serum for, A., 1177.
 fungus, A., 1279.
 industrial, A., 1188.
 snake, lysolecithin formed by, A., 863.
 detection of, A., 134.
 pharmacological detection of, A., 764.
- Poisoning, hyperglycaemia in, A., 387.
 acetic acid, A., 1327.
 with *Amanita*, carbohydrate metabolism of the liver in, A., 1453.
 arsenic trihydride, A., 1188.
 with bromoacetic acid, effect of, on muscle, A., 1449, 1450.
 cadmium, B., 695.
 by carbon tetrachloride or guanidine, hypoglycaemia produced by, A., 1453.
 carbon monoxide, A., 1329.
 carbon dioxide in arterial blood in, A., 1454.
 carbon dioxide, from vegetable refuse, B., 46.
 carbonyl chloride, use of urease in, A., 759.
 chloroform, during narcosis, A., 872.
 cocaine, morphine and potassium cyanide, A., 1187.
 cyanide, sulphur and thiocyanate excretion in, A., 261.
 hydrogen sulphide, B., 419.
 lead, A., 118.
 detection of lead in, A., 518.
 by lead pigments, B., 768.
- Poisoning, mercury, treatment of, with sodium thiosulphate, A., 652, 982.
 by metallic salts during vitamin-*D* feeding, A., 532.
 methyl alcohol, B., 613.
 morphine, A., 651.
 osmium tetroxide, A., 982.
 phosphorus, decomposition of amino-acids in the body in, A., 119.
 strychnine, calcium in blood-serum in, A., 981.
 thallium, effect of, on cholesterol, calcium, and sugar, A., 652.
 thallium acetate, determination of thallium in, A., 328.
 uranium, curative action of plants and their juices, A., 652.
- Polar molecules. See Molecules, polar.
- Polarimeters, indicators for, (P.), B., 522.
- Polarimetry, of solutions with low rotation, use of mercury lamp in, A., 457.
 photo-electric, A., 1026.
- Polarisation, dielectric, A., 1113.
 of elements, A., 147.
 of colloids, A., 681.
 molecular, influence of temperature on, A., 670.
- Polariscopes, for use in glass-works, B., 841.
 helium lamp for, A., 1262.
- Polarity, theory of, in solids during passage of currents, A., 290.
 and optical activity of substituent groups, A., 961, 965, 1159, 1160.
 and vapour pressure, A., 1222.
 alternate, theory of, in relation to substitution in chlorobenzenes, A., 1283.
- Polarography, technique of, A., 816.
- Poliomyelitis virus, immunisation with aluminium hydroxide mixtures of, A., 396.
- Polishes, manufacture of, (P.), B., 962.
 liquid, (P.), B., 936.
- Pollen, and its extracts, A., 870, 1100.
 chemical composition of, A., 536.
 membranes of, A., 536, 884.
- Polonium, preparation of, of high activity, A., 923.
 life period of, A., 995.
 stable isotope of, A., 142.
 rate of decay of, A., 407.
 effect of mesothorium on normal decay of, A., 15.
 range of α -rays of, in gases, A., 890.
 scintillation curves of α -rays of, A., 1108.
 absorbable radiation accompanying α -rays from, A., 280.
 ionisation of air by α -particles of, A., 995.
 γ -rays from, A., 142.
 electrochemistry and chemistry of, in tartaric acid, A., 915.
 volatilisation of, A., 1255.
 solutions containing electrolytes, centrifuging of, A., 809.
 precipitation of, and its complex derivatives, A., 697.
 gaseous compound of, with carbon oxides, A., 923.
 precipitation of, in analysis, A., 591.
- Polonium, detection and separation:—
 detection of, A., 1026.
 separation of, from protoactinium fixed on tantalum pentoxide, A., 1026.
- isoPoly-acids, determination of degree of aggregation of ions of, A., 448.
- Polyazo-dyes, (P.), B., 240*, 1042, 1134.
- Polyfructoses, and their determination, B., 511.
- Polyhalides, A., 1022, 1235.
 absorption spectra of, A., 784.
- Polyhalite, extraction of potash from, B., 970.
 leaching of, with ammonium carbonate, B., 717.
- Polyindenes, A., 833.
- Polylavans, natural, A., 1100.
- Polymerisation, A., 198, 202, 465, 560, 945, 1021, 1031, 1032, 1040, 1239, 1270, 1276.
 in relation to association, A., 1114.
 and autoxidation, A., 1031.
 and condensation, A., 68.
 and polymerides, A., 833.
 and ring formation, A., 193, 205.
- Polymethine dyes and their intermediates, manufacture of, (P.), B., 623, 1041.
- Polymethylene bromides, electric moments of, A., 1112.
- Polyorphism, A., 1407.
 of substances of high molecular weight, A., 971.

- Polyoxymethylenes**, A., 198.
magnetic susceptibility of, A., 411.
- Polypeptidase**, amino-, activity and phosphorus content of, A., 1456.
- Polypeptidases**, specificity of, A., 768.
hydrolysis of polypeptides by, A., 767, 768.
- Polypeptides**, X-ray structure of, A., 152.
hydrolysis of, by enzymes, A., 124, 767, 768.
by yeast, A., 874.
by yeast, pancreatin and pancreas extracts, A., 392.
action of proteolytic enzymes on, A., 984.
from *l*(+)-alanine, A., 1279.
benzoylated, hydrolysis of, A., 86.
determination and buffer action of, A., 972.
- Polypeptides**, halogeno-, removal of halogen from acyl derivatives of, A., 718.
- Polyphenyls**, A., 1406.
- Polypodium occidentale**, B., 273.
- Polyporic acid**, A., 1062.
- Polysaccharides**, A., 826, 827, 941, 1276.
synthesis of, by action of *Acetobacter xylinus* on carbohydrates, A., 826.
by bacteria and enzymes, A., 267.
reduction of rotatory power of, in presence of alkali, A., 467.
dopolymerisation of acetates of, A., 337.
toxic properties of, A., 656.
determination of hexoses in hydrolytic products of, A., 1038.
- Ponds**, swarming of phytoplankton in, A., 1448.
- Popillia japonica** (Japanese beetle), digestive secretion of larva of, A., 381.
- Poplars**, positive gas pressure in, A., 1198.
- Porcelain**, manufacture of, (P.), B., 884, 1141.
electrical strength of, B., 934.
treatment of clay for production of grinding balls and lining blocks of, B., 925.
firing of, in tunnel ovens, B., 759.
for use in cooking, manufacture of, (P.), B., 884.
calcium fluoride, B., 720.
- Porcupine**, sulphur in wool and quills of, A., 1179.
- Pork**, soft, A., 257.
- Porosity** of textiles, B., 798.
- Porous masses**, for storage of compressed gases, (P.), B., 228.
- Porphyrin**, and its copper salt, from 3:4:5-tribromo-3':4':5'-trimethylpyrromethene hydrobromide, A., 967.
- Porphyrin**, nitrodihydroxy-, derivatives of, A., 633.
- Porphyrins**, A., 101, 240, 633, 746, 747, 1431.
constitution and spectra of, A., 784, 1310.
ring synthesis of, A., 240.
from C component of cytochrome, A., 125.
introduction of iron into, A., 633.
determination of, in bile, faeces and urine, A., 863.
- Porphyrins**, chloro-derivatives of, A., 745.
- Porridges**, cereal, cooking of, B., 1119.
- Potash**. See Potassium hydroxide.
- Potash minerals**, heat of solution of, A., 912.
- Potash shale**, effect of, on plants, B., 38.
- Potassium**, atomic weight of, from plant ash, A., 141.
isotopes of, A., 1207.
in plants, A., 1342.
atoms, rotation of, A., 784, 1203.
mean free path of, in nitrogen, A., 1348.
production of, (P.), B., 354.
spectrum of, A., 283, 1206.
Zeeman effect in, A., 276.
vacuum spark spectrum of, A., 1103.
photo-electric emission from, A., 406, 1206.
photo-electric effect and reflexion of electrons from, A., 542.
 β -rays from, A., 1208.
 γ -rays of, A., 890.
radioactivity of, A., 1208.
distribution of electrons emitted from, by polarised light, A., 994.
vapour, distribution of photo-electrons in, A., 889, 1347.
transport number of, in its amalgams, A., 569.
vapour pressure of, A., 295.
administration of, in heart failure, A., 977.
- Potassium compounds**, production of, (P.), B., 924.
- Potassium salts**, production of, from insoluble minerals, B., 110.
from sylvinite, (P.), B., 757.
crude, treatment of, (P.), B., 61.
- Potassium salts**, molecular volumes of, A., 24.
absorption of, by plants, A., 1466.
manurial action of, B., 605.
effect of p_H on reaction of, to plants, B., 456.
effect of intracerebral injection of, A., 386.
- Potassium peraluminate**, A., 50.
aluminates and phosphates, separation of, (P.), B., 840.
bromide, infra-red dispersion of crystals of, A., 286.
absorption spectrum of crystals of, A., 1210.
thermodynamics of fused solutions of silver bromide and, A., 1234.
- carbonate**, manufacture of, (P.), B., 349, 924.
by the magnesias process, B., 755.
- dimagnesium hydrogen carbonate**, A., 181.
- canallite**, production of, (P.), B., 803.
- chlorate**, solubility of, in glycerol, A., 558.
thermal decomposition of, A., 917.
- perchlorate**, determination of, in explosives, B., 136.
- chloride**, manufacture of, (P.), B., 349.
at Kali Ste.-Thérèse, B., 537.
transference numbers of, A., 685.
electrolysis of solutions of, A., 1013.
dielectric constant of, A., 1367.
thermodynamics of, A., 800.
heats of dilution of, in sucrose and carbamide solutions, A., 42.
equilibrium of, with magnesium hydroxide and water, A., 1128, 1235.
double decomposition of sodium iodide and, A., 41.
chloride, hydroxide, and nitrate, heat content values for aqueous solutions of, A., 912.
- ohlorido and nitrate**, equilibrium of, with aluminium nitrate and chloride, B., 487.
- chloride, nitrate, and nitrite**, equilibria of, in ternary systems with sodium salts, A., 912.
- chloride and sulphate**, conductivity of, A., 1129.
- chlororhenate**, A., 810.
- chromate**, action of hydrogen sulphide on solutions of, A., 1021.
absorption of light by solutions of, A., 302.
crystal structure of, A., 1218, 1359.
- dichromate**, absorption of light by solutions of, A., 302.
paramagnetism of ions of, A., 291.
crystal structure of, A., 27, 549.
photochemical oxidation of alcohols by, A., 1019.
- dichromate and sulphate**, equilibrium of water and, A., 912.
- fluoborate**, X-ray investigation of, A., 289.
- fluotitanate**, A., 446.
- halides**, production of, (P.), B., 1048.
reciprocal decomposition of, with silver halides, A., 800.
- hydroxide (caustic potash)**, recovery of, from wyomingite, B., 392.
- iodate**, action of sodium thiosulphate on solutions of, A., 180.
- iodide**, solubility of, in water, A., 677.
compounds of mercuric iodide and, A., 695.
determination of, in iodine-iodide tinctures, B., 630.
- polyiodides**, solid, A., 580.
- permanganate**, crystal structure of, A., 897, 1115, 1359.
spectrum of, A., 1210, 1350.
action of hydrogen on, A., 1022.
union of gases with, A., 1227, 1228.
oxidation of chlorites with, A., 184.
- nitrate (saltpetre)**, production of, (P.), B., 439, 488, 631, 803, 882.
from Chile saltpetre, B., 60.
from chloride, B., 756.
photo-electric behaviour of, A., 147.
crystal structure of, A., 1359.
fusion equilibrium of calcium nitrate with, A., 431.
equilibrium of, with water and calcium nitrate, A., 310.
- nitrate and sulphate**, equilibrium of, with magnesium nitrate and sulphate, A., 685.
- nitrite**, pure, preparation of, A., 921.
- oxide**, equilibrium of, with calcium and silicon oxides, A., 1011.
- phosphate**, production of, (P.), B., 1093.
- dihydrogen phosphate**, X-ray analysis of, A., 289.
production of, (P.), B., 718.
- perthene**, electrical conductivity of solutions of, A., 43.
solubility of, in water, A., 1119.
reduction of, A., 584.
- chromium selenate**, Zeeman effect in absorption spectrum of, A., 996.

- Potassium sulphate**, production of, (P.), B., 488.
 production of sodium carbonate and, (P.), B., 840.
 space-group and crystal structure of, A., 27.
 equilibrium of, with magnesium sulphate, sodium chloride, and water, A., 1011.
 with sulphuric acid and water, A., 911.
 aluminium sulphate (*potassium alum*), crystallography of, A., 151, 788.
 chromium sulphate (*chrome alum*), preparation of, from potassium dichromate, B., 802.
 magnetic susceptibility of, A., 29.
 neodymium sulphate, A., 321.
 pyrosulphate, action of, with ammonia and amines, A., 921.
 polysulphides, A., 807.
 dithionate, crystal structure of, A., 1115.
 cuprous thiosulphate, A., 49.
- Potassium determination and separation** :—
 determination of, A., 452, 700, 1258, 1259.
 as vapour, (P.), B., 893.
 colorimetrically, in physiological fluids, A., 990.
 volumetrically, A., 1024.
 with sodium, as benzidine sulphate, A., 926.
 in urine, A., 134.
 in raisin wine and must, B., 563.
 and its separation from lithium and sodium, A., 587.
 determination of sodium in, B., 1009.
- Potassium ions**, mobility of, A., 1012.
- Potatoes**, biology of, B., 691.
 size of cells and of starch granules in, B., 778.
 polyphenol-oxidase in, A., 774.
 ash and potash contents of, B., 989.
 distribution of potassium in, A., 1200, 1466.
 effect of potash on sensitivity to frost of, B., 267.
 nutritive value of proteins of, A., 868.
 relation between dry matter and starch contents of, B., 778.
 composition of meal from, B., 42.
 growth-promoting substances in, A., 395.
 effect of manuring on quality of, B., 988.
 effect of fertilisers on growth of, B., 605, 988.
 effect of fertilisers on pseudonecrosis in, B., 216.
 action of mineral fertilisers and stall manure on, B., 360.
 sources of nitrogen in fertilisers for, B., 1067.
 effect of potash fertilisers on, B., 1150.
 effect of cyanide on respiration and sugar content of, A., 886.
 effect of thiocyanates and cyanides on amylase activity of, A., 1908.
 buffer action of sap of, A., 272.
 yields of tubers and starch in, produced by potash manures, B., 940.
 tubers, effect of nutrition on cell size in, B., 988.
 p_H of, A., 1102.
 influence of carbon dioxide and oxygen on sprouting and value of, B., 988.
 influence of nitrogen, phosphoric acid, and potash on, B., 1112.
 influence of sulphur compounds in breaking dormancy of, B., 858.
 storage of, B., 317.
 ecological deterioration of, B., 691.
 effect of fertilisers on scab formation in, B., 312.
 spraying of, B., 1112.
 use of disinfectants in fertilisers for control of scab and *Rhizoctonia* in, B., 1113.
 organic mercury compounds for control of scab and *Rhizoctonia* in, B., 1150.
 relation between chemical composition and cookery technique of, B., 652.
 culinary quality of, in relation to soluble sugar content, B., 860.
 blackening of, after cooking, A., 1102.
 early, manuring of, B., 605.
 sliced, souring of, B., 1152.
 sweet. See *Ipomœa batatas*.
 relation of analysis of leaves of, to nutrient content of soils, B., 605.
 benzidine reaction in, A., 533.
 determination of starch in, B., 217, 362.
- Potato beetle**, Colorado, catalase content of, during metamorphosis, A., 115.
 toxicity of lead arsenate to, A., 1188.
- Potato flakes** as distillery raw material, B., 270.
 as a feeding-stuff and distillery raw material, B., 1120.
 determination of starch value and distillation value of, B., 822.
- Potato flour**, relation between tenacity of, and size of starch grains, B., 648.
 determination of acidity of, B., 901.
- Potato juice**, inhibition of oxidation of sulphur by, A., 1088.
 effect of ethylene chlorohydrin on p_H of, A., 1466.
- Potato spirit**, influence of distillation on quality of, B., 40.
- Potato starch**. See under Starch.
- Potential**, measurement of, A., 1144.
 and solvation activity coefficient, A., 312.
 of dielectrics, A., 546.
 of electrodes, A., 172.
 at moving electrodes, A., 687.
 at gas-solution boundary, A., 300.
 in closed metallic circuits, A., 1237.
 of space lattices, A., 18.
 differences in air-liquid interfaces, A., 313.
 absolute, determination of, A., 1129.
 contact, A., 291.
 measurement of, between metals, A., 290.
 elimination of, A., 1370.
 electrode, and adsorbed ionic films, A., 1237.
 electrokinetic, A., 435, 570, 795, 1229.
 ionic, A., 1237, 1371.
 oxidation-reduction, A., 687, 802, 1013.
 determination of, from equilibrium, A., 687.
 with indifferent electrodes, A., 594.
 unstable, A., 172, 173.
 phase boundary, relation between adsorption, surface tension, particle size and, A., 300.
 spark, of gases, effect of temperature on, A., 275.
 streaming, and coagulation, A., 977.
 surface, determination of, A., 1206.
 of unimolecular films, A., 299.
 transference and transport, in metallic solutions, A., 685.
- Potentiometer**, election tube, A., 754.
 Fuessner, improved, A., 590.
 thermionic valve, A., 43, 1129.
 vacuum tube, A., 456.
- Pottery**, semi-porcelain bodies for manufacture of, (P.), B., 22.
- Pottery materials**, batch grinding of, B., 719.
- Poultry**, nutrition of, A., 515.
 with soya bean cakes, B., 1153.
 effect of pimento pepper on, A., 389.
- Powders**, determination of area of, A., 1007.
 specific surface of, A., 905.
 surface factor of, B., 465.
 mixing of, (P.), B., 371.
 black. See under Explosives.
 colloidal, instability and combustion of, A., 317, 574.
 fine, air separator for, A., 706.
 flash light, (P.), B., 864.
 massed, machine for disintegrating and sifting of, (P.), B., 279.
 propellant, colloidizing of, (P.), B., 783.
 smokeless. See under Explosives.
 analysis of, by radioactive methods, A., 449, 584.
- "Praehormone"**, Abderhalden reaction after administration of, A., 123.
- Praseodymium mercuride**, A., 1381.
 sulphate, double salts of thallium sulphate and, A., 1381.
- Precipitates**, adsorption by, A., 559.
 coagulating, adsorption in, A., 422.
 crystalline, distribution of foreign substances in, A., 297.
 isoelectric, and soil colloids, B., 173.
- Precipitation**, mechanism of, A., 182, 323, 582.
 apparatus for, (P.), B., 867.
 chemical, A., 1256.
 electrical, apparatus for, (P.), B., 305, 849.
 fractional, A., 288.
 periodic, A., 907.
 in gels, A., 39.
- Precipitators**, Cottrell, carbon tubes in, B., 122.
 electrostatic, collecting electrode for, (P.), B., 123.
- Pregnancy**, acetone substances in, A., 865.
 gastric juice in, A., 383.
 gonad-stimulating hormone in urine of, A., 1337.
 thyroid hormone in blood in, A., 1337.
 toxæmias of, A., 511.
 serum-proteins in, A., 383.
 p_H and acid-base balance in, A., 760.
 labour and delivery, ammonia in blood in, A., 1325.

- Preserves, vegetable, determination of starch in, B., 221.
 Presses, for extraction of liquids, (P.), B., 570.
 for manufacture of porcelain, etc., (P.), B., 159.
 worm, for treatment of moist materials, (P.), B., 570.
 Pressure, apparatus for regulation of, in liquids, (P.), B., 521.
 tap for, A., 1144.
 regulators for, A., 1388.
 automatic vacuum, A., 705.
 high-vacuum regulation of, A., 1388.
 ow-vacua control apparatus for, A., 329.
 Prestone. See Ethylene glycol.
 Prickly pear, eradication of, by arsenic acid, B., 692.
 Priming compositions, manufacture of, (P.), B., 699.
 Printing, process for, (P.), B., 686.
 manufacture of colours for, (P.), B., 292.
 of acetate silk and materials containing cellulose, (P.), B., 438.
 of cellulose acetate silk fabrics, (P.), B., 755.
 of cotton, with mordant dyes, (P.), B., 243.
 with vat dyes, (P.), B., 584, 628, 969, 1004.
 of fabrics, (P.), B., 155*.
 on fabrics of cellulose esters or ethers, (P.), B., 17.
 of materials containing cellulose ethers or esters, (P.), B., 801.
 of fibrous materials containing cellulose esters, (P.), B., 923.
 of naphtholated goods, aniline black in, B., 485.
 on silk and fibres, (P.), B., 243.
 of textiles, manufacture of coloured reserves in, (P.), B., 155.
 containing cellulose esters or ethers, (P.), B., 716.
 of textile fibres, (P.), B., 243.
 of wool, (P.), B., 166*.
 with leuco-vat esters, (P.), B., 17.
 with soluble esters of leuco-vat dyes, (P.), B., 674.
 with sulphur dyes, B., 345.
 with thiazinequinone dyes, (P.), B., 346.
 with thioindigo vat dyes, (P.), B., 59.
 with vat dyes, (P.), B., 1137.
 discharge, of materials containing cellulose esters or ethers, (P.), B., 838.
 with vat dyes, use of glucose in, B., 922.
 intaglio, manufacture of colour lakes and dyes for, (P.), B., 337.
 multi-colour, corrected colour-selection positives for, (P.), B., 863.
 Printing machines, B., 880.
 Printing pastes, (P.), B., 292, 391.
 Printing rollers, gelatinous plastic masses for, (P.), B., 732.
 Prolan-A, A., 1462.
 Proline, hydroxy-, preparation of, A., 361.
dl-Prolyl-*d*-alanine, A., 767.
dl-Prolylglycine, A., 767.
dl-Prolylglycylglycine, A., 767.
dl-Prolyl-*dl*-leucine, A., 767.
dl-Prolyl-*dl*-leucylglycine, A., 767.
 Propadiene, and its use as anæsthetic, A., 709.
 Propaldehyde, decomposition of, on platinum, A., 1148.
 Propaldehyde, β -chloro-, acetal of, preparation of, A., 824.
 Propane, viscosity of, A., 1117.
 thermal dissociation of, A., 1240.
 pyrolysis of, B., 957.
 production of carbon black from, B., 98.
 Propane, α -diamino- β - γ -trioximino-, A., 1274.
 $\alpha\alpha\beta\gamma\gamma$ -heptachloro-, A., 415.
 halogen derivatives, dipole moments of, A., 669.
 cycloPropane, Raman effect for, A., 545.
 Propane- $\alpha\beta$ -disulphonylmalonic acid, A., 335.
 Propane- $\alpha\beta\gamma\gamma$ -tetracarboxylic acid, A., 603.
 Propane- $\alpha\beta$ -dithiolacetic acid, and its salts and derivatives, A., 335.
 Propan- β -ol- $\alpha\beta$ -dicarboxylic acid, α -chloro-, A., 607.
 Propellants, equation of state for gases from explosion of, A., 554.
 cycloPropene series, A., 620.
 Propene-2:3-diol. See Propylene, β - γ -dihydroxy-.
 Propenyl compounds, oxidation of, by diazo-compounds, A., 476.
 Propenylbenzenes, substituted, bases derived from, A., 953.
 β -isoPropenyl- ϵ -keto- $\Delta\alpha$ -heptenoic acid, A., 357.
 4-Propenylpyrocatechol, derivatives of, A., 954.
 $\Delta\beta$ -Propenyl- γ -sulphonylmalonic acid, A., 335.
 Propinene, pyrolysis of, A., 61.
Propionibacterium pentosaceum, production of propionic acid by, A., 656.
 Propionic acid, production of, by bacteria, A., 656.
 Propionic acid, magneto-optical dispersion of, A., 24.
 conductivity of mixtures of, with hydrogen peroxide, A., 434.
 dielectric constant of, A., 895.
 ethyl and methyl esters, magneto-optical dispersion of, A., 411.
 o -phenylacetamidophenyl ester, A., 615.
 detection of, A., 335.
 determination of, in admixture with acetic and butyric acids, A., 1395.
 Propionic acid, α -amino- β -hydroxy-. See Serine.
 bromo-, salts, reaction of thiosulphates with, A., 1132.
 β -chloro-, esters, manufacture of, (P.), B., 1040.
 Propionic acids, disubstituted, influence of substituents on optical rotation in derivatives of, A., 711.
 containing an ethyl group, influence of substitution on optical rotation of, A., 821.
 containing a phenyl group, configurational relationship of, A., 1413.
 α - and β -chloro-, catalytic hydrogenation of, and their salts, A., 1269.
 Propionitrile, β -chloro-, A., 748.
 Propiono- β -veratrylethylamide, β -chloro-, A., 365.
 Propionyl chloride, molecular compounds of, with hydroxyazo-compounds, A., 613.
 3-Propionylacenaphthene. See 3-Acenaphthyl ethyl ketone, A., 1294.
 Propionylcholine, and its salts, A., 943.
 Propionyl-5:10-dihydrophenarsazine, 10-chloro-, A., 1316.
 3-Propionyl-2:4-dimethylpyrrole, and its 5-aldehyde, A., 747.
 5-Propionyl-2:4-dimethylpyrrole, A., 1306.
 3-Propionyl-2:4-dimethylpyrrole-5-carboxylic acid, and its ethyl ester, A., 746.
 4'-Propionyl-4:5'-dimethylpyrromethene, 3:5-dibromo-, and its hydrobromide, A., 747.
 3-Propionyl-diphenylamine-6'-arsinic acid, A., 1316.
 Propionylglucosamine, α -bromo-, derivatives of, A., 470.
 Propionyl-leucines, α -bromo-, A., 1150.
l-Propionyl-*d*-leucyl-*d*-leucine, α -bromo, A., 1430.
 Propionyl-*d*-neoisomenthylamine, A., 229.
r-Propionylmethylamine, crystal structure of, A., 550.
 3-Propionyl-4-methyl-2-bromomethylpyrrole-5-carboxylic acid, ethyl ester, A., 746.
 3-Propionyl-4-methyl-2-ethylpyrrole, and its derivatives, A., 853.
 3-Propionyl-2-methyl-4-propylpyrrole-5-carboxylic acid, ethyl ester, A., 747.
 4-Propionyl-naphthalic acid, and its derivatives, A., 959, 1294.
 4-Propionylresorcinol, and its *tribromo*- and *dichloro*-derivatives, A., 217.
 Propiophenone, o -hydroxy-, semicarbazone, A., 1303.
 2:4:6-*tri*hydroxy-, benzylation of, and its derivatives, A., 963.
 Propiophenonearsinic acids, and their semicarbazones, A., 1314.
 γ -*n*-Propoxy-*n*-butyric acid, A., 710.
 3-*n*-Propoxydimethylaniline, and 4-nitroso-, A., 1153.
 γ -Propoxyephedrine, A., 350.
 β -*n*-Propoxyethoxyacetic acid, A., 198.
 β -*n*-Propoxyethylmalonic acid, ethyl ester, A., 710.
 3-*n*-Propoxyphenols, nitro-, A., 1153.
 2-*n*-Propoxyquinoline-4-carboxylic acids, A., 1167.
n-Propyl alcohol, movement of xylene drops on aqueous solutions of, A., 162.
 action of bromine on, A., 1138.
 isoPropyl alcohol, density of, at low temperature, A., 899.
 viscosity of, at low temperatures, A., 899.
 equilibria of, with water and salts, A., 1365.
 solubility of oils in, B., 550.
 action of bromine on, A., 1138, 1267.
 manufacture of acetone from, (P.), B., 194.
 detection of, in brandy, cosmetics, etc., B., 413.
 in spirituous liquors, B., 218.
 Propyl butyl ethers, A., 462.
 butyl sulphite, A., 934.
 chloride, electrical moment of, A., 285.
 molecular polarisation of, A., 147.
 isoPropyl thiocyanate, preparation of, A., 831.
 cycloPropyl cyanide, A., 1031.
 α -Propyl ethylene trichloro-orthoacetate, A., 1395.
 α -glyceryl ether, and its diphenylcarbimide derivative, A., 62.
n-Propylacetoacetanilide, A., 1407.
 Propylacetoacetic acid, ethyl ester, condensation of, with aromatic amines, A., 1407.
n-Propylacetoaceto-*p*-aniside, A., 1407.

- n*-Propylacetoaceto-*p*-phenetidine, A., 1407.
n-Propylacetoacetotoluidides, A., 1407.
n-Propylacetoacetoxylidides, A., 1407.
 β -Propylacetaldehyde, and its derivatives, A., 1273.
 β -Propylacrylic acid, A., 1273.
 β -Propyladipic acid, and its nitrile, A., 1417.
Propylallenes, A., 1147.
Propylamine, thermal decomposition of, A., 1240.
1-Propylaminobenzthiazoles, 5-chloro- and 5-chloro-3-bromo-, and their derivatives, A., 969.
1-*n*-Propylamino-5-methylbenzthiazole, and its derivatives, A., 969.
p-iso-Propylaminophenol, and its derivatives, A., 837.
o-*n*-Propylaminophenylarsinic acid, A., 1173.
 δ -Propylaminovaleric acids, hydrochlorides of, A., 1306.
 β -*n*-Propyl-*n*-amyl alcohol, and its derivatives, A., 1309.
 β -*n*-Propyl-*n*-amylamine, A., 1309.
n-Propyl-*n*-amyl ketone, synthesis of, and its *p*-nitrophenylhydrazones, A., 1399.
Propylarsines, dichloro-, A., 1435.
5-Propylbarbituric acids, 5-bromo-, A., 1074.
n-Propylbenzene, β -*g*-trichloro-, A., 833.
p-fluoro-, A., 945.
n-Propylbenzenes, β -amino- α -hydroxy-, and their hydrochlorides, A., 832.
2-Propylbenzimidazoles, A., 600.
 α -Propyl Δ^2 -butenyl ketone, A., 1399.
d-*n*-Propyl-*n*-butylcarbinol, and its hydrogen phthalate, A., 709.
 α -iso-Propylbutyramide, α -bromo-. See Neodorm.
d-iso-Propylcarbinols, molecular rotation of, A., 599.
Propylcellobiosides, heptaacetates of, A., 73.
 α -iso-Propylcinnamaldehyde, and its semicarbazone, A., 485.
iso-Propylcresols, A., 838.
Propyldi-3-acetyl-2,4-dimethylpyrrolmethane, A., 494.
10-Propyl-5:10-dihydrophenarsazine, and its derivatives, A., 373.
10-Propyl-9:10-dihydrophenarsazine, dihydroxide and oxide, A., 637.
10-Propyl-5:10-dihydrophenarsazines, A., 1434.
5-*n*-Propyldihydroresorcinol hydrate, A., 723.
 α -*n*-Propyldistyryl ketone, *mm'*-dihydroxy-, A., 485.
 ζ -Propyl-*n*-dodecane, A., 242.
Propylene, pyrolysis of, A., 194.
production of liquid hydrocarbons from, A., 60.
addition of hydrogen halides to, A., 1391.
Propylene, α -dichloro-, action of, on sodium derivatives of phenols, A., 952.
 β -dihydroxy-, manufacture of derivatives of, (P.), B., 334.
Propylene glycol ethyl and methyl ethers, and their acetates, and β -chloropropyl and isopropyl ethers, A., 62.
Propylene oxide, condensation of, with isoamylamine and with benzylamine, A., 720.
reaction of, with diethylamine, A., 204.
with piperazine, A., 851.
iso-Propylene oxide, reaction of, with ethylamine and diethylamine, A., 204.
n-Propylguaiacol, formation of, as degradation product of lignin, A., 941.
4-iso-Propylcyclohexanol phenylurethane, A., 958.
4-iso-Propylcyclohexanone, derivatives of, A., 958.
1-4-iso-Propyl- Δ^2 -cyclohexen-1-one, and its derivatives, A., 958.
Propyl *n*-hexyl ketone, semicarbazone of, A., 242.
2-Propyl-4-(3'-4'-dihydroxyphenyl)thiazole, γ -amino-, and its sulphate, A., 748.
 α -iso-Propyldienefructose sulphate, salts of, A., 72.
iso-Propyldienetrihydroxycyclohexanone, and its derivatives, A., 727.
1:2-iso-Propyldieneidosyl-6-amine *p*-toluenesulphonate, A., 71.
Propyl β -methylamyl ketone, A., 242.
3-Propyl-4-methylcoumarins, 7-hydroxy-, and their acetyl derivative, A., 962.
N-Propylmorpholine, γ -hydroxy-, A., 1075.
1-iso-Propylnaphthalene, and its picrate, B., 706.
2-*n*-Propylperinaphth-1:3-diketohindene, 5-hydroxy-, A., 487.
n-Propyl- α -naphthol-orange, A., 344.
3-*n*-Propylcyclopentanone, and its derivatives, A., 1417.
4-Propylphenol, 2-amino- and 5-nitro-2-amino-, and their acetyl derivatives, and 2-nitro-, A., 1434.
 β -*p*-iso-Propylphenylethylamine hydrochloride, A., 213.
 β -*p*-iso-Propylphenylpropionamide, A., 213.
2-iso-Propylpiperazine, and its salts and dibenzoyl derivative, A., 1430.
N-Propyl-2-piperidones, and their salts, A., 1306.
1-iso-Propyl-2-pyridone, A., 1306.
1-Propyl-2-pyridones, 5-iodo-, and its hydrochloride and 5-nitro-, A., 234.
Propylpyridylum chloride hydrochloride, γ -amino- β -hydroxy-, A., 1428.
1-Propylpyrrole, γ -chloro-, A., 365.
2-Propylquinoline, preparation of, and its salts, A., 98.
Propylquinolylum chloride hydrochloride, γ -amino- β -hydroxy-, A., 1428.
n-Propylresorcinolcarboxylic acid, dibromo-, ethyl ester, A., 1055.
 α -*n*-Propylstyryl methyl ketone, *p*-hydroxy-, and its oxime, A., 485.
Propylsulphones, A., 1409.
p-Propylsulphonylphenylhydrazines, A., 1409.
1-Propyltheobromine, β -chloro-, and β -hydroxy-, and its derivatives, A., 239.
Propylthiolacetic acid, and its brucine salt, A., 628.
9-Propyl-8-thiouric acid, A., 743.
iso-Propylthujol, and its acetate, A., 466.
n-Propyltoluene, *m*- β -*g*-trichloro-, A., 833.
iso-Propyltoloxycetic acids, A., 838.
4-Propyl-1:2:3-triazine, 2-amino-6-thiol-, and its salts, A., 368.
Propylisoxanthine, 8-bromo-9-dibromo-, A., 744.
9-Propylisoxanthine-8-thiolacetic acid, A., 743.
n-Propyl-*m*-xylene, 4- β -*g*-trichloro-, A., 833.
Protaminase, A., 984.
Protamines, structure of, A., 984.
Protargol, determination of alkalinity and silver content of, B., 221.
Proteases, nature of, A., 393, 520, 1191, 1456.
action of, on urease, A., 393.
in tissues, A., 1445.
animal, specificity of, A., 392, 520, 984.
plant. See under Plants.
Proteins, A., 661, 797, 990, 1317.
structure of, A., 855, 856, 1436.
structure and denaturation of, A., 638.
molecular weights of, A., 752.
physical chemistry of, A., 1098.
and brewing, B., 902.
unimolecular layers of, A., 1007.
action of alkalis on absorption spectrum of, A., 971.
scattering of light by solutions of, A., 21.
depolarisation and light absorption by alkaline solutions of, A., 426.
effect of radiation on, A., 580.
effect of short-wave irradiation of, A., 166.
electrokinetic properties of, A., 1009.
dielectric constant of solutions of, A., 562.
pure, alteration by neutral salts of charge on, A., 798.
effect of salts on isoelectric point of, A., 1009.
Dakin's enolisation theory of racemisation of, A., 971.
calculation of partial specific volume of, A., 562.
amoeboid motion as result of swelling of, A., 1091.
contraction in hydration of, A., 1368.
viscosity of alkaline solutions of, A., 427.
dialysis of, A., 374, 645, 778.
in anhydrous solutions, A., 166.
interaction of, with colloids and electrolytes, A., 306.
sols, optical properties of, A., 305.
production of threads from colloidal solutions of, (P.), B., 482.
phase rule studies on, A., 42.
dynamic action of, A., 648.
effect of heat on composition of, A., 1078.
coagulation of, A., 908, 1080, 1125.
and its reversal, A., 426, 971.
action of alcohols on heat coagulation of, buffered with acetate, A., 376.
reversion of hydrolysis of, A., 654.
hydrolysis of, and use of products therefrom, (P.), B., 942.
determination of amino-acids from, A., 245.
electrolytic oxidation of hydrolysis products of, B., 474.
degradation of, A., 1436.
during mashing, B., 902.
donaturation of, A., 316.
fission of, in the organism, A., 868.
formation of acetaldehyde by alkaline fission of, A., 856.
effect of alkali on, A., 1436.
action of ammonio-bases and sodium on, in liquid ammonia, A., 1437.

- Proteins**, action of formaldehyde and silver nitrate on, A., 1336.
 effect of, on colloidal gold and gum benzoin, A., 1009.
 determination of constitution of bases from, A., 1430.
 precipitation of, by neutral salts, A., 798.
 influence of lipins on, A., 640.
 and their degradation products, with tannin, A., 1317.
 acetyl bases from, A., 245.
 treatment of products with a basis of, (P.), B., 131.
 in beer, "tannin nitrogen" and "tannin number" as guide to, B., 85.
 biological value of, A., 256.
 resorption of, in digestion, A., 1185.
 digestibility of, A., 868.
 effect of vitamin deficiency on, A., 515.
 replacement of, by ammonium salts in diet, A., 118.
 effect of, in diet on bile salt production, A., 761.
 nutrition with, A., 385.
 allantoin and purines in urine from degradation of, A., 647.
 pathological decomposition of, A., 262.
 antibody, chemical alteration of, A., 267.
 colloidal, refraction of, A., 908.
 crude, determination of digestibility of, A., 762.
 crystalline, from commercial trypsin, A., 655.
 electrolyte-free, A., 856, 1317.
 hydrogenated, fission products of, A., 245, 1173.
 insoluble, p_H stability region of, A., 683.
 iodised, separation of iodine from, by X-rays, A., 1081.
 milk, determination of, B., 564.
 mixed, biological value of, in diet, A., 868.
 racemic, optical behaviour of, A., 1436.
 serum. See Serum proteins.
 soluble, constitution of, A., 39, 245.
 vegetable, A., 503.
 whey-, foaming properties of, B., 41.
 characterisation of, by determination of affinity, A., 503.
 electrochemical characterisation of, by silver activity of their silver salts, A., 1317.
 biuret reaction of, A., 1439.
 use of myosalvarsan as reagent for, A., 1437.
 analysis of, B., 1025.
 determination of, by differential opacimetry, A., 1318.
 refractometrically, A., 1095.
 in cerebrospinal fluid and other body-fluids, A., 251.
 in food, B., 1119.
- Proteins**, iodo-, tryptic digestion of, A., 1090.
 detection of thyroid-like activity in, A., 1463.
- Protein products**, production of, (P.), B., 1154.
- Proteinases**, manufacture of, free from peptidases, (P.), B., 1069.
 autolytic activity of, of animal tissues, A., 874.
 pancreatic, heat inactivation of, A., 1456.
- Protein-cellulose membranes**. See under Membranes.
- Proteus**, decomposition of urea by, A., 876.
- Prothrombase**, preparation and properties of, A., 111.
- Protoactinium**, isolation of, A., 1208, 1255.
 separation of, from polonium fixed on tantalum pentoxide, A., 1026.
 purification of, and its determination in radioactive minerals, A., 1021.
- Protochlorophyll**, fluorescence spectrum of, A., 884.
- Protohæm**, A., 634.
- Protons**, production of, A., 782.
 Dirac theory of, A., 141.
 properties of, A., 406, 429.
 in solvents, A., 1234.
 mass of, A., 279.
 ratio of mass of, to mass of electron, A., 783.
 diffraction of, A., 1107.
 relation of metrical theory to charge and mass of electrons and, A., 666.
 capture of electrons by, A., 278.
 ionisation by passage of, through gases, A., 1107.
 range of, in relation to ionisation, A., 889.
 effective molecular cross-section of gases towards, A., 782.
- Protophæophytin**, trimethyl ester, A., 634.
- Protophytychlorin** trimethyl ester, A., 247.
- Protoplasm**, structure of, A., 1098.
 with the Spierer lens, A., 532.
 effect of salts on extensibility of, A., 1201.
 cholesterol of, A., 507, 644, 975, 1081.
 thiol substances in, A., 661.
- Protoplasm**, amoebic, molecular structure of, A., 1091.
- Protoplasts**, permeability of, to salts, A., 399.
- Protoporphyrin**, crystallisation of, A., 745.
- Protozoa**, rôle of, in sewage purification by activated sludge, B., 567.
 Feulgen's reaction applied to, A., 770.
- Provitamin-A**, A., 880.
- Prunes**, effect of drying and sulphuring on vitamin-C content of, B., 461.
 canned, swelling of, B., 903.
 sugar, alternate-bearing, carbohydrate and nitrogen constituents of, A., 1339.
- Prussian blue**, action of tartrates on, A., 698.
 analysis of pigments containing, B., 851.
- Pseudomonas pyocyanea*. See *Bacillus pyocyaneus*.
- Pseudomonas tabaci*, as cause of "wildfire" in tobacco, A., 133.
- Psittacinite** from Bisbee, Arizona, A., 817.
- Psychoda alternata*, effect of insecticides on, B., 1124.
- Psyllium*, seeds of, A., 131.
- Ptyalin**, action of, on starch, A., 653.
- Pukateine**, constitution of, and its derivatives, A., 749.
- Pulegone 2:4-dinitrophenylhydrazones**, A., 937.
- Pulp**, manufacture of, (P.), B., 154, 837, 1136.
 drum-type mill for, (P.), B., 437.
 process water in, B., 387, 625.
 digesters for, (P.), B., 533, 1136.
 machine for filtering of, (P.), B., 879.
 suction dehydration machine for, (P.), B., 17.
 drying of, B., 1077; (P.), B., 341.
 washing of, (P.), B., 921.
 determination of degree of decomposition of, B., 671.
 treatment of waste liquors from, B., 1089; (P.), B., 1076, 1090.
 destructive distillation of residues from, (P.), B., 378.
 utilisation of by-products from, B., 106.
 production of articles from, (P.), B., 534, 1136.
 sheets, suction chamber for machines for production of, (P.), B., 437.
 of high absorptivity, manufacture of, (P.), B., 921.
 bituminous, feltable, production of, (P.), B., 907.
 fibrous, manufacture of hollow articles from, (P.), B., 389.
 kraft, manufacture of substitute for, (P.), B., 1045.
 low density, production of, for explosives, (P.), B., 533.
 semi-, from spruce wood, B., 196.
 soda-. See Soda-pulp.
 sulphate. See Sulphate pulp.
 sulphite. See Sulphite pulp.
 colorimetric examination of, B., 754.
 determination of pentosans in, B., 387.
- Pulp board**, manufacture of, (P.), B., 922.
- Pulverisation of solids**, (P.), B., 423.
- Pulverisation apparatus**, (P.), B., 518, 519, 1125.
- Pulverisation machines**, (P.), B., 182.
- Pulverised materials**, burners for, (P.), B., 56.
- Pulverisers**, (P.), B., 279, 518, 519, 786, 952, 1030, 1125.
 feeding of solids to, (P.), B., 558.
- Pump**, for corrosive liquids, B., 657.
 circulating, A., 1145.
 gas ejector, A., 1027.
 oil-well, steel sucker-rods for, (P.), B., 163.
 roller, (P.), B., 614.
 rotary, for acids, B., 47.
 vacuum, diffusion, A., 1027.
 high-vacuum vapour, (P.), B., 3.
 water-operated suction, (P.), B., 522.
- Pumpkin seed oil**, (P.), B., 210.
- Purgatives**, swelling of, A., 1188.
- Purification of solid organic compounds**, A., 417.
- Purines**, content of, in various organs, A., 111.
 determination of, in urine, A., 509.
- Purine bases**, production of, from vegetable substances, (P.), B., 136.
- Purpurin**, and its methyl ester, A., 1433.
- Pus**, calcium content of, A., 1447.
 peroxidase reaction in, A., 1447.
- Putranjiva Roxburghii*, oil from seeds of, A., 1199.
- Putrescine**, methylation of, A., 718.
- Puzzuolana* of the Canary Islands, A., 817.
- Pycnanthemum miticans*, essential oil of, B., 698.
- Pyelography**, synthesis of contrast media for, A., 235.
- Pyknometers**, A., 190, 1144.
- Pyloric stenosis**, chloride metabolism in, A., 1447.

- Pyocyanine, preparation of, A., 1159.
 potentiometric study of, A., 684.
 oxidation-reduction of, A., 1013, 1159, 1371.
 formation of semiquinone as intermediary reduction product of, A., 1309.
- Pyracridone, constitution of, and *bz*-nitro- and *bz*-nitro-(3-nitro)-, and their derivatives, A., 852.
 manufacture of, and its derivatives, (P.), B., 366.
- Pyramidone, detection of, in presence of antipyrine, A., 99.
 determination of, by cyanosilvermetry, A., 639.
- Pyranthrone derivatives, manufacture of, (P.), B., 196*.
- Pyranthrone dyes, vat, manufacture of derivatives of, (P.), B., 580.
- Pyrazine bases, tautomeric, equilibria and rate of change of, A., 742.
- Pyrazine compounds, reactions of, A., 367.
- Pyrazole, magnesium derivative, A., 1168.
- Pyrazole series, diazotisation in, A., 99.
- Pyrazoleanthrone dyes, vat, manufacture of, (P.), B., 624.
- Pyrazoleanthronecarboxylic acids, anthraquinonylamides of, as dyes, (P.), B., 338.
- N*-Pyrazolecarboxylic acid, and its ethyl ester, A., 1168.
- Pyrazolinedicarboxylic acid, ethyl ester, dihydrazide of, and its benzylidene derivative, A., 632.
- Pyrene, structure of, A., 1351.
- Pyrenium salts, A., 1305.
- Pyrethrin I, determination of, B., 365.
- Pyrethrum, extraction of, (P.), B., 782.
 petroleum extracts of, B., 996.
 storage of extracts of, (P.), B., 946.
 ionic concentrations and interfacial tension of extracts of, B., 313.
 evaluation of flowers of, B., 313.
 effect of soap on toxicity of products of, B., 508.
 analysis of, B., 1154.
 determination of active principles of extract of, B., 514.
 determination of kerosene extracts of, B., 508.
- Pyridine, Hantzsch's synthesis of, A., 850.
 vapour pressure of, A., 417.
 hydrogenation of, (P.), B., 434.
 and its homologues, A., 434.
 under pressure by Bergius process, A., 362.
 velocity of reaction of allyl bromide with, A., 316.
 action of ammonia on, in presence of dehydrogenating catalysts, A., 1428.
 formation of 2:2'-dipyridyl from, A., 632.
 complex salts of fluosilicates with, A., 1381.
 derivatives, A., 234, 740, 1071, 1072, 1306, 1315.
 manufacture of, (P.), B., 711.
 reduction of, catalytically, A., 1430.
 action of lithium alkyls on, A., 364.
 arsenated and iodised, toxicity of, A., 120.
 hydrogenated, production of, (P.), B., 179.
 benzoferricyanide, A., 741.
 dibromide, bromochloride and iodobromide, A., 1428.
 copper benzoate, A., 1415.
 detection and determination of, B., 56.
- Pyridine, 3-amino-, 3-fluoro-, and 3-iodo-, and their derivatives, A., 740.
 2:4-dichloro-, 4-chloro-2-amino- and -2-hydroxy-, 4-iodo-2-amino- and -2-hydroxy-, and their derivatives, A., 362.
 2-hydroxy-, isomerism of derivatives of, and 5-iodo- and nitro-hydroxy-, silver salts, A., 234.
 2-iodo-, ethiodide and methiodide, and their ψ -cyanine dye derivatives, A., 741.
 2-nitro-, formation of, A., 740.
- Pyridines, sulphonation of, (P.), B., 13.
N-methyl-derivatives of, (P.), B., 797.
 phenyl-substituted, catalytic synthesis of, A., 97.
- Pyridines, *di*- and *tri*-chloro-, chloro-*mono*- and -*di*-bromo-, and -*mono*- and -*di*-iodo-, A., 740.
- Pyridine-3-azo-*p*-dimethylaniline, and its hydrochloride, A., 740.
- Pyridine-3-azo- β -naphthol, and its hydrochloride, A., 740.
- Pyridine-2-carboxylic acid, chloro-, and 4-iodo-, derivatives of, A., 362.
- Pyridine-3-carboxylic acid, 2-amino-, and its hydrochloride, 5-nitro-2-amino- and -2-hydroxy-, A., 852.
- Pyridine-5-carboxylic acid, 2-amino-, 2-chloro-, 3-chloro-2-thiol-, 2-hydroxy-, and 2-thiol-, and their derivatives, A., 1071, 1072.
- Pyridinecarboxylic acids, condensation of, with amino-acids, A., 363.
- Pyridinecarboxylic anhydrides, preparation of, A., 363.
- Pyridine-5-sulphonic acid, 3-bromo-2-amino-, 2-chloro-, 2-chloro-3-bromo-, and 3-nitro-, A., 1071.
- Pyridinethiocarboxylic acids, 3-bromo-, 3-chloro-, and 2-thiol-, and their derivatives, A., 1071.
- Pyridine-2:3:4-tricarboxylic acid, trimethyl ester, A., 630.
- Pyridine-2:4:5-tricarboxylic acid, and its silver salt, A., 630.
- Pyridinium salts, molecular compounds of, A., 740.
- Pyridinodiethylgold bromide, A., 78.
- Pyridinofluorans, 5:7-dibromo-6-hydroxy- and 6-hydroxy-, A., 627.
- "Pyridium," antiseptic and germicidal efficiency of, B., 1124.
- 2-Pyridone, and its *N*-alkyl derivatives, hydrogenation of, and its potassium derivative, A., 1306.
- Pyridones, halogenated, manufacture of, (P.), B., 319.
- Pyrid-2-one-1-acetic acid, 5-iodo-, synthesis of, and its ethyl ester, A., 235.
- Pyrid-2-one-*N*-acetic acid, 5-iodo-, sodium salt. See Uroselectan.
- Pyridonearsinic acids, biochemical action of, A., 1454.
 and amino-, derivatives of, A., 1072, 1315.
- 5-Pyridyl methyl ketone, 2-chloro-, A., 1072.
- N*-Pyridylphthalimides, A., 851.
- Pyridylpiperidines. See Neonicotines.
- 4-Pyridylpyridinium salts, and additive compound with mercuriochloride, A., 850.
- Pyrimidines, A., 100, 367, 632, 881.
 physiology of, A., 121.
- Pyrimidine bases, metabolism of. See under Metabolism.
- Pyrites, types and occurrence of, A., 1390.
 separation of cobalt and iron from solutions obtained by lixiviation of, (P.), B., 157*.
 cathodic behaviour of, A., 571.
 thermal dissociation of, A., 1127.
 burners for, (P.), B., 1009.
 combustion of, in the Herreshoff furnace, B., 762.
 flash-combustion roasting of, B., 762.
 oxidation of, in soils, B., 173.
 recovery of sulphur from, (P.), B., 588.
 determination of sulphur in, B., 537, 885.
- Pyroetioporphyryns, and bromo-, and their salts, A., 102.
- Pyroaurite, A., 1028.
- Pyrocalciferol, and its 3:5-dinitrobenzoate, A., 1464.
- Pyrocatechol (*catechol*), ebullioscopy of, in lithium chloride solutions, A., 798.
 equilibrium of, with carbamide, A., 567.
 action of oxalyl chloride on, A., 1411.
 complex compounds of, with quadrivalent elements, A., 446.
 β -chloroallyl ether, A., 952.
- Pyrocatechol, *di*- and *tri*-bromo-, mercuric derivatives of, A., 1435.
- tetrabromo*-, A., 477.
- Pyrocatechol-disulphonic acids, manufacture of, (P.), B., 1041.
- Pyrochlore, crystal structure of, A., 289.
- Pyrochlorin *e*, derivatives of, A., 368.
- Pyrochloroporphyrin, and its methyl ester, A., 369.
- Pyrocholoidanic acid, methyl ester, A., 841.
- Pyro- ψ -choloidanic acid, methyl ester, A., 352.
- Pyrodin, effect of rarefied air on blood of rabbits treated with, A., 1328.
- Pyro-electricity, detection of, A., 1029.
- Pyrogallol, condensation product of, with cyclohexanone, and its salts, A., 627.
 action of tartrates on, A., 1174.
 1:2-dimethyl ether, *mono*- and *di*-nitro-, A., 1411.
 1:3-dimethyl ether, *tribromo*- and *trichloro*-, oxidation derivatives of, A., 488.
- Pyrogallolsulphonic acid, action of aminoacetal on, A., 618.
- Pyroligneous acid, treatment of, B., 791.
- Pyromellitdi- α -naphthylimide, A., 485.
- Pyromellitic acid, derivatives of, A., 484.
- Pyrometers, leakage from protection tubes of, B., 1077.
 hot air and gas, B., 785.
 photo-electric, (P.), B., 640.
 radiation, (P.), B., 866.
 surface, for metals, etc., B., 680.
- Pyrometry, optical, A., 190.
- Pyromorphite, A., 817.
 partial substitution of lead chloride by chromate in, A., 1021.
- Pyrones, preparation of, from phenols, A., 1303, 1304.
- γ -Pyrones, absorption spectra of, A., 360.
- Pyronine dyes, effect of unsaturated chromophones on, A., 1426.

Pyrophosphoric acid. See under Phosphorus.
 Pyrophosphorous acid. See under Phosphorus.
 Pyroquinovic acid, derivatives of, A., 1159.
 Pyrosmalite, formula and structure of, A., 550.
 Pyroxene, equilibrium of, with wollastonite and anorthite, A., 310.
 chromiferous, from South Africa, A., 594.
 Pyroxene-andesite, A., 1146.
 Pyroxonium salts, absorption spectra of, A., 360.
 Pyroxylin, manufacture of, (P.), B., 968.
 solutions of, with low viscosity, (P.), B., 170.
 production of compound sheets of, (P.), B., 877.
 Pyroxylin varnishes. See under Varnishes.
 Pyrrohaemin, reaction of, with chloromethyl ether and stannic chloride, A., 745.
 Pyroketones, A., 1168.
 Pyrrole, synthesis with, A., 849, 1428.
 and its homologues, A., 849.
 hydrogenation of, A., 361.
 as biological catalyst, A., 1189.
 derivatives, A., 365.
 synthesis of, A., 361.
 formation of, from amino-acids, A., 1311.
 reduction of, catalytically, A., 629.
 Pyrroles, synthesis of, A., 494.
 action of aliphatic diazo-compounds on, A., 1305.
 Pyrrole compounds, with amino-groups and unsaturated side-chains, A., 368.
 Pyrrole series, local anaesthetics in, A., 629.
 Pyrrole-2-acetic acid, and its ethyl ester, A., 1306.
 Pyrrole-2-aldehyde, equilibrium of, in solution, A., 362.
 1:9(*N*)-isopyrroleanthrone-3-carboxylic acid, 2-hydroxy-, A., 226.
 Pyrrole-black, A., 1427.
 Pyrrolidine, dehydrogenation of, A., 361.
 catalytic dehydrogenation of, A., 97.
 derivatives, synthesis of, A., 361.
 2-substituted derivatives, synthesis of, A., 849.
 2-Pyrrolidylcarbinol, A., 629.
 2-Pyrrolidylmethylamine, action of nitrous acid on, A., 629.
 1-Pyrrolidylmethylmethylcarbinol, and its benzoate, A., 629.
 γ (1-Pyrrolidyl)propyl *p*-aminobenzoate, A., 629.
 Pyrrolines, 2-substituted, synthesis of, A., 849.
 Pyromethenes, A., 1168.
 Pyrroporphyrins, and bromo-, and their copper salts and derivatives, A., 101.
 β -1-Pyrroylethyl methyl ketone, and its derivatives, A., 366.
 β -1-Pyrrolylpropionic acid, ethyl ester, A., 366.
 1-Pyrrolylpropionic acid, and its derivatives, A., 365.
 and its ethyl ester, A., 629.
 γ -1-Pyrrolylbutyronitrile, A., 366.
 β -(1-Pyrrolyl)ethyl alcohol, and its esters, A., 629.
 1-Pyrrolylethylmethylcarbinol, A., 629.
 2-Pyrrolylmethylamine, action of nitrous acid on, A., 629.
 1-Pyrrolylmethylmethylcarbinol, A., 629.
 1-Pyrrolylmethylmethylcarbinol, A., 629.
 β -1-Pyrrolylpropionic acid, and its derivatives, A., 365, 629.
 γ -(1-Pyrrolyl)propyl alcohol, and its esters, A., 629.
 Pyruvaldehyde, hydroxy-, preparation and physiological action of, A., 517.
 Pyruvic acid, production of, by yeast, A., 391, 393.
 transformation of, A., 65.
 halogenation of, and chlorodibromo-, A., 65.
 action of aniline and its derivatives on benzaldehyde and, A., 98.
 reaction between furfuraldehyde, β -naphthylamine and, A., 237.
 elimination of carbon dioxide from, A., 1024.
 effect of, on metabolism of cells, A., 866.
l- β -octyl ester, A., 1154.
 phenylhydrazones, A., 475, 1046.
 determination of, A., 662.
 Pyryleninium compounds, A., 1070.

Q.

Quanta, modification of, by photo-ionisation, A., 408.
 Quantum mechanics and principle of identity, A., 2.
 application of, to kinetics, A., 891.
 perturbation theory in, A., 17.
 numbers for electrons in molecules, A., 1.
 theory and atomic dimensions, A., 143.

Quartz, A., 46.
 purification of, B., 1011.
 production of fluorescence in, by cathode rays, A., 150.
 influence of temperature on Raman spectrum of, A., 668.
 Raman effect in, A., 20.
 reflexion spectrum of, A., 408.
 ultra-violet absorption spectrum of, A., 667.
 boundary potentials between electrolytes and, A., 570.
 sputtering of, A., 1144.
 lattice constant of, A., 150.
 orientation of, A., 789.
 crystals, grinding of, (P.), B., 893.
 solid inclusions in, A., 191.
 helical springs of, A., 1027.
 aegirite-augite glaucophane, from Teshio, Japan, A., 1265.
 amorphous, electrical conductivity in, A., 154.
 coloured and pure fused, thermal radiation of, A., 1109.
 crystalline and fused, magnetic rotation of, A., 787.
 infra-red spectra of, A., 1352.
 powder, adherence of, in electrolytic mixtures, A., 162.
 smoky, imitation of coloration of, A., 459.
 Quebrachitol, X-ray structure of, A., 1219.
 recovery of, from rubber latex serum, (P.), B., 77.
 Quebracho alkaloids, constitution of, A., 242.
 Quercetin, distribution of, in plants, A., 131.
 reduction of, A., 1304.
 preparation of cyanidin from, A., 940.
 Quercitol, structure of, A., 1219, 1411.
 Quinacetophenone methyl ether oxime, A., 813.
 Quinaldine, condensation of, with mono- and di-ethylamines, A., 964.
 Quinaldine, 4-chloro-, picrate of, A., 1318.
 Quinaldinic acid, and its derivatives, A., 363.
d- β -octyl and *l*-menthyl esters, A., 965.
 Quinazoline, manufacture of physiologically active derivatives of, (P.), B., 742.
 Quinazoline, 2:4-dichloro-, reaction of, in alcohol, with salts and bases, and 2-chloro-4-hydroxy-, A., 1431.
 Quinazolines, A., 1431.
 Quinazolones, triazole derivatives from, A., 1074.
 Quinazolones, amino-, derivatives of, A., 1074.
 Quinbenzarsazinic acid, 10-nitro-, A., 1173.
 Quinic acid, decarboxylation of, A., 727.
 action of, on yeast and *Hyphomycetes*, A., 523.
 from fruits, B., 415.
 in higher plants, A., 130.
 Quinine, elimination of chlorides and citrates of bismuth from, A., 120.
 sulphonation of, A., 371.
 effect of, on bacteria of hay infusions, A., 770.
 toxicity of mixtures of strychnine and, A., 1329.
 manufacture of double salts of, (P.), B., 1041.
 iodobismuthate, determination of, A., 753.
 sulphate, radiation from hydration of, A., 996.
 detection of, in quinine syrup, B., 364.
 titration of, in ultra-violet light, A., 1433.
 determination of, with quinhydrone electrode, A., 246.
 in tablets, etc., B., 179.
 Quinine alkaloids, optical rotation of, A., 371.
 Quininesulphonic acid, and its derivatives, A., 371.
 Quinizarin, *mono*- and *di*-amino-, 5-bromo-, and *mono*- and *di*-chloro-, and their derivatives, A., 846.
 Quinol, velocity of photographic development by, and dependence thereof on presence of sulphite, B., 743.
 catalysis of oxidation of, by manganese, A., 918.
 effect of, on oxidation of linseed oil, B., 401.
 preparation of coumarins and 1:4-pyrone from, A., 1303.
 toxic action of, on frog's muscle, A., 119.
 β -chloroallyl ether, A., 952.
 Quinol, 2:5-dichloro-6-bromo-, A., 836.
di-*p*-hydroxy- and *di*-*p*-methoxy-phenyl ethers, A., 480.
 2-nitro-5-amino-, and its acetyl derivative and diacetate, and its conversion into quinones, A., 488.
 Quinols, thio-, A., 838.
 Quinoline, and its homologues, hydrogenation of, (P.), B., 434.
 formation of triphenylmethane dyes from, A., 632.
 copper benzoate, A., 1415.
 methiodide, amino-derivatives of, A., 751.
 derivatives, A., 235, 236, 237, 242, 965, 969, 970, 1167, 1306, 1307, 1429.

- Quinoline derivatives, formation of, from imide chlorides of acetarilides, A., 236.
 from *o*-nitro-derivatives of ω -cyano- ω -arylidenacetanilides, A., 236.
 synthesis of, A., 364.
 from arylamides of carboxylic acids, A., 494.
 manufacture of, (P.), B., 823.
 ultra-violet absorption spectra of, A., 283.
 chemotherapy of, A., 651.
 containing arsenic, A., 372, 1173.
 formation of coloured adsorption compounds of, with iodine, A., 98.
 as microchemical reagent for heavy metals, A., 188.
 detection of, colorimetrically, A., 375.
- Quinoline, 4-amino-6-hydroxy-, and its salts, A., 237.
 hydroxy-, sulphate as preservative for plant tissues, A., 402.
 8-hydroxy-, Friedel-Crafts reaction with, and 5-amino-8-hydroxy-, acetyl and benzoyl derivatives, and their hydrogen sulphates, A., 98.
 5:8-dihydroxy-, and its sulphate, A., 741.
 5-nitroso-6-hydroxy-, derivative of, with sodium hydrogen sulphite, A., 1306.
- isoQuinoline, fission of, and its transformation into 2-phenyl-naphthalene-5:2'-dialdehyde, A., 741.
 derivatives, A., 1168.
- Quinolines, aminohydroxy-, acetyl and benzoyl derivatives, and 7-iodo-5-amino-8-hydroxy-, acetyl derivative, and their salts, A., 364.
 4-halogeno-, A., 237.
- Quinolines, 2-amino-, anisoyl derivatives, derivatives of, A., 751.
- Quinoline bases, 2-hydroxy-derivatives, preparation of, A., 97.
- Quinoline-2-aldoxime, configuration of, and its acetyl derivative, A., 1429.
- Quinolines, aminoacetyl-*p*-arsanilic acids, and their nitroso-derivatives, A., 970.
- Quinolines, benzeneazo-*p*-sulphonic acid, 6-hydroxy-, sodium salt, derivative of, with sodium hydrogen sulphite, A., 1306.
- Quinoline-4-carboxylic acid, 2- and 6-hydroxy-, and their derivatives, A., 237, 1167.
- Quinoline-5-carboxylic acid, 8-hydroxy-, derivatives of, A., 741.
- Quinolines, carboxylic acids, condensation of, with amino-acids, A., 363.
- Quinolines, carboxylic anhydrides, preparation of, A., 363.
- Quinoline-8-sulphonic acid, 5-amino-6-hydroxy-, and its derivative with hydrochloric acid, A., 1306.
- N*-isoQuinoliniumsulphonic acid, A., 741.
- Quinolpyridinium salts, A., 838.
- Quinol sulphonic acids, *mono*- and *di*-chloro-, barium salts, A., 93.
- o*-8'-Quinolylaminophenylarsinic acid, 5'-nitro-, and its salts, A., 1173.
- p*-2-Quinolylbenzoic acid, *p*-4-amino-, A., 1307.
- 4-Quinolylcarbimide, 6-hydroxy-, A., 237.
- 3-Quinolyl dimethylcarbinol, and its picrate, A., 1310.
- 5-Quinolyl methyl ketone, 7-amino-8-hydroxy-, 7:8-dihydroxy-, and 7-nitroso-8-hydroxy-, and their derivatives, A., 740.
 8-hydroxy-, Beckmann rearrangement with, A., 741.
- 3-Quinolyl styryl ketone, A., 1310.
- Quinolyl-4-urethane, 6-hydroxy-, A., 237.
- Quinone. See Benzoquinone.
- Quinones, formation of, A., 1061.
 additive capacity of, A., 1061.
 higher benzologues of, reduction potentials of, A., 623.
 halogenated, action of organo-magnesium compounds on, A., 1062.
 polynuclear, nuclear hydrogenation of, A., 845.
 detection of, colorimetrically, A., 972.
- o*-Quinones, analysis of potentiometrically, A., 489.
- Quinoneimide dyes, production of, by peroxidase, A., 390.
- Quinonitroles, A., 838, 845.
- Quinonoid compounds, crystal structure of, A., 152.
- meri*Quinonoid salts, A., 835.
- Quinovic acid, A., 1158.
- Quinoxaline, reactions of, as an ammonoglyoxal, and its additive compound with sodium hydrogen sulphite, A., 366.
- Quinoxaline, 2:3-dichloro-, constitution of, A., 852.
- Quitenine, derivatives of, A., 242.

R.

- Rabbits, p_n of alimentary tract of, A., 641.
 Australian, frozen, yellowing of fat in, B., 651.
- Racemisation, A., 1430.
- Racquets, treatment of gut for, (P.), B., 108.
- Radiation, quantum theory of, A., 784.
 adsorption power of black and white substances used for measurement of, A., 405.
 and molecular properties, A., 281.
 chemical decomposition by, A., 179.
 effect of, on colloids, A., 424.
 scattered by diatomic molecules, intensity and polarisation of, A., 21.
 mitogenetic, A., 1192, 1457.
 action of, on bacteria, A., 1095.
 effect of, on metabolism, A., 389.
 detection of, by means of Liesegang rings, A., 133.
 detection and intensity of, A., 125, 662.
 See also Rays.
- Radiation law, Planck's, deduction of, from adsorption, A., 143.
- Radicals, surface reactions of, A., 1247.
 free, electron affinity of, A., 946.
 addition of, to unsaturated compounds, A., 1043.
 polycentricity as cause of resistance to association of, A., 946.
 organic, A., 845, 846, 1073.
 hydrocarbon, relation of structure of, to equilibrium in organic reactions, A., 573.
- Radioactinium, α -particles from, A., 783.
- Radioactive atoms, grouping of, A., 407, 890.
 coatings, behaviour of, on heating, A., 15.
 constants, A., 1108.
 disintegration, A., 15, 16, 890, 1208, 1209, 1349.
 elements, electrochemical separation of, from solution, A., 1237.
 disintegration of, A., 995.
 indicators. See under Indicators.
 minerals in Japan, A., 459.
 age of, A., 1154.
 substances, distribution of, in the atmosphere, A., 1108.
 manufacture of, (P.), B., 719.
 dangers in refining of, B., 839.
 β -transformation of, A., 1108.
 determination of activity of, A., 1108.
 luminous, measurement of brightness of, A., 1387.
- Radioactivity, spintharoscope for measurement of, A., 815.
 of water. See under Water.
- Radio-detectors, use of synthetic galena in, B., 891.
- Radiometer effect, A., 407.
- Radiometry, ultra-violet, thermo-couple and filter method for, A., 1386.
- Radium in rocks, A., 332, 930.
 origin of, in petroleum springs, A., 1145.
 thermoluminescence from exposure to, A., 998.
 microcalorimetric measurement of heat from, A., 281.
 rays, colour changes of glass under, A., 579.
 γ -rays of, A., 16, 1349.
 scattering of, A., 16.
 content of, in plants, A., 774.
 influence of, on chondriome of plants, A., 272.
 lethal effect of, on tissue cultures, A., 873.
 determination of, A., 142, 1258.
 emanation. See Radon.
- Radium-*B* + *C*, preparation of, A., 1208.
- Radium-*C*, β -ray spectrum of, A., 783.
 long-range α -particles from, A., 890, 995.
 short-range α -particles from, A., 280.
- Radium-*D*, β -particles from, A., 1349.
 number of γ -quanta emitted from, A., 281.
 γ -rays from, and their internal absorption, A., 543.
- Radium-*D* and -*E*, absorption coefficient of γ -rays from, A., 281.
- Radium-*E*, spectrum of, A., 666.
- Radon (*radium emanation*), isotopes of, A., 1108.
 purification of, A., 1208.
 removal of, from emanation chamber, A., 280.
 initial charge on recoil atoms of, A., 543.
 polar molecules in molecular aggregates of gases with, A., 412.
 effect of α -particles from, on hydrogen, A., 142.
 determination of, in air, A., 995.
- Ragweed, pollen of, A., 1186.

- Railways, tractor device for treatment of, with chemicals, (P.), B., 635.
- Railway rails, testing of, for Italian railways, B., 979.
- Rain, conservation of, as carbohydrates, A., 1325.
- Raman effect, A., 21, 408, 409, 545, 997, 998, 1211, 1352, 1353.
theory of, A., 21.
and association, A., 668.
and chemical constitution, A., 284, 785.
and constitution in organic liquids, A., 667.
improved technique for, A., 20.
apparatus for, A., 667.
with standard tubular lamps, A., 20.
excitation of, with cadmium arc, A., 146.
intensity in, A., 997.
intensity and polarisation of, A., 893.
polarisation of, A., 997.
in the ultra-violet, A., 892.
dependence of, on frequency of incident rays, A., 21.
and electrolytic dissociation, A., 431, 1367.
at the critical point, A., 145.
transition in, A., 545.
in crystals, A., 668.
of diatomic molecules, A., 997.
in gases, A., 997, 1111.
in liquids, A., 1111.
in organic liquids, A., 1111.
in organic compounds, A., 145, 785.
with polyatomic molecules, A., 145.
in quartz, A., 20.
in solutions of inorganic salts, A., 997.
with triatomic molecules, A., 145.
in water, A., 21.
- Raman-Smekal effect, A., 785.
- Ramdohrte from Bolivia, A., 707.
- Ramie fibres, X-ray analysis of, A., 26.
- Rape, effect of ammonium sulphate on field germination of, B., 857.
- Rape oil, solubility of, in ethyl alcohol, B., 500.
in isopropyl alcohol, B., 550, 894.
- Raspberries, control of beetle on, B., 216.
quality of juice of, B., 1072.
sour, juice of, B., 609.
- Raspberry syrup, non-crystallising, B., 1154.
- Rats, selection of food constituents by, A., 761.
growth factors for, A., 989.
growth of, and food requirements, A., 515.
effect of cotton-seed meal on, A., 761.
effect of diet of fats, oils, meat, and bread on, A., 648.
effect of manganese on, A., 761.
effect of starch and sugar diets on, A., 257.
effect of calcium and phosphorus intake on oestrus cycle and reproduction in, A., 1330.
distribution of carotene and vitamin-A in, A., 529.
effect of diet and nephrectomy on creatine and nitrogen content of, A., 762.
glycogen formation in, A., 513.
manganese metabolism in, A., 516.
relation of fat-free diet to scaly tail in, A., 531.
manufacture of poisons for, (P.), B., 464.
albino, effect of fluorides on calcium metabolism of, and bone composition, A., 518.
morphinism in, A., 1187.
black, effect of wheat germ on coats of, A., 129.
white, influence of growth on constituents of, A., 1326.
glycogen storage in, fed on *Arctium lappa* roots, A., 386.
fasting and normal, nitrogen content of, A., 117.
- Rays, Becquerel, colouring and luminescence by, A., 545.
biologically effective, nomenclature and standards for, A., 995.
canal, Doppler bands in, A., 1107.
ionisation by, A., 13.
high-speed, production of, A., 279.
cathode, continuous spectrum during bombardment by, A., 1105.
diffraction of, A., 1205.
velocity of, A., 1347.
photographic action of, A., 1252.
apparatus for showing interference with, A., 405.
chemical effects of, A., 320.
high-speed, effect of, on alcohols aldehydes, ketones, and ethylene, A., 1379.
and Röntgen, interference determinations with, A., 277.
- Rays, corpuscular, registering and making visible, A., 703.
atmospheric origin of, A., 143.
cosmic, A., 666, 1209, 1350.
spectrum of, A., 408.
solar component of, A., 1104.
ionisation-depth curve for, A., 408.
biological effect of, A., 1208.
ultra-penetrating, stellar origin of, A., 143.
detection and absorption of, A., 17.
hard exciting, atomic photo-effect with, A., 994.
molecular, diffraction of, A., 14.
monochromatic, A., 1350.
Röntgen, production and control of, A., 26.
measurement of wave-length of, A., 1346.
apparatus for investigation with, (P.), B., 123, 1017.
intensity of, A., 26.
from atoms, A., 3.
reflected from glass, platinum and silver, A., 541.
frequencies of, for various elements, A., 541.
Ray modification of, A., 665.
reflexion of, A., 150, 1105, 1205.
critical angle of reflexion and index of refraction of, A., 26.
diffraction of, A., 151.
apparatus for, A., 1387.
in liquids, A., 152.
by organic solutions, A., 672, 1360.
by solid and liquid organic substances, A., 1002.
anomalous, A., 781.
spectra of. See under Spectra.
absorption and scattering of, A., 1105, 1346.
absorption formula for, A., 138.
partial absorption of, A., 288, 781, 1105.
K-absorption of, A., 1105.
measurement of absorption edges of light elements in, A., 781.
measurement of hardness and absorption of, A., 58.
dependence of width and intensity of Debye lines and rings on source of, A., 288.
non-diagram lines for, A., 665.
wave-length of, A., 138.
wave-length change of, by partial absorption, A., 277, 993.
effect of, on rotary power, A., 24.
scattering coefficient of, in relation to wave length and atomic number, A., 3.
scattering factors of atoms for, A., 889.
scattering of, by argon, helium, and neon, A., 1105.
by cubic crystals, A., 896.
by gases, A., 781.
by gases and crystals, A., 1105.
by light gases, A., 413.
by mercury vapour, A., 665.
by solids, A., 896.
by vitreous solids, A., 550.
by water and salt solutions, A., 413.
ionisation of air by, A., 994.
ionisation of inert gases by, A., 1346.
interaction of, with bound electrons, A., 781.
histology of, A., 26.
action of, on blood and spleen, A., 765.
on blood-sugar and cholesterol, A., 873.
on inner secretion and organ poisons, A., 1330.
on tissues, growth, and vitality, A., 122.
on tissue cultures, A., 389.
tubes, (P.), B., 70, 498.
anticathode for, (P.), B., 304, 306, 549.
incandescence-cathode for, (P.), B., 258.
target electrode support for, (P.), B., 257.
for dental purposes, (P.), B., 209.
for production of K-rays of uranium, A., 191.
photographs. See under Photographs.
examination of crystalline bodies with, (P.), B., 869.
application of, to chemistry, A., 788.
powder analysis with, A., 1145.
spectroscopic analysis by means of, A., 449.
continuous, from single electron impacts, polarisation of, A., 277.
long wave, reflexion of, A., 138.
monochromatic, production of, A., 993.
short, scattering of, by molecular hydrogen, A., 277.

- Rays, Röntgen, soft, research with, B., 815.
 relation between critical potential and electron diffraction of, A., 141.
 absorption of, A., 1346.
 unpolarised, scattering of, A., 670.
 ultimate, and absorption lines, A., 1104.
 detection of, from organisms, by hydrogen peroxide, A., 1465.
- α -Rays, magnetic spectra of, A., 280.
 magnetic spectrograph for, A., 16.
 ionisation by, A., 407, 1349.
 anomalous scattering of, A., 1108.
 relation between omission of γ -rays and, A., 142.
 photographic action of, A., 1252.
- β -Rays, nuclear deflexions of, A., 890.
 escape of, from nuclei, A., 666.
 spectra of, A., 1108, 1208.
 absorption of, by matter, A., 543, 783.
- γ -Rays, origin of, A., 1208.
 intensities of, A., 281.
 photo-electric absorption of, A., 281, 1105, 1209.
 absorption and scattering of, A., 995.
 relation between emission of α -rays and, A., 142.
 photographic effects of, A., 281.
 biological effects of, A., 1208.
 hard, scattering of, A., 142, 407.
 nuclear, artificial excitation of, A., 142.
 scattered, recoil rays from, A., 16.
 short, absorption law for, A., 281.
- H-Rays, properties of, A., 1348.
- Rayon. See under Silk, artificial.
- Rayon cloth, swelling of, in sodium hydroxide solution, B., 340.
- Reactions, mechanism of, A., 342.
 striae in, A., 1263, 1367.
 process for promoting, (P.), B., 50.
 periodic process in, A., 181, 1368, 1373.
 apparatus for, (P.), B., 788.
 electrical apparatus for, (P.), B., 951.
 electrical activation of, (P.), B., 1105.
 temperature control in, (P.), B., 866.
 potential energy discharge diagrams of, A., 578.
 relation between energy of activation of, and constant S of Arrhenius' equation, A., 313.
 relation of yield from, and temperature, A., 313.
 influence of magnetic field on, A., 788.
 law of thermodynamic equilibrium of, A., 169.
 discontinuity in velocity coefficient of, at the critical temperature, A., 1239.
 inhibition of, A., 438.
 morphology of, in gels, A., 38.
 and odour, A., 962.
 bimolecular, chemical kinetics of, A., 1239.
 association, A., 915.
 chain, rôle of adsorbed gases in initiation of, A., 688.
 endothermic, apparatus for, (P.), B., 569.
 explosive, A., 916.
 heterogeneous, kinetics of, A., 574.
 effect of poisons on, A., 692.
 high-pressure, B., 1029.
 irreversible, reciprocal relations in, A., 546.
 organic, ionic theory of, A., 670.
 mechanism of, A., 820, 937.
 in gaseous electric discharge, A., 179.
- Reactivity of atoms and groups in organic compounds, A., 197.
- Reagents, analytical, specifications for, A., 698.
 corrosive, storage and delivery apparatus for, A., 592.
 organic, preparation of, A., 467.
 sensitivity and molecular size of, A., 701.
 for mineral analysis, A., 188.
- Records, sound. See Sound records.
- Recrystallisation, theory of, A., 288, 1217.
 loss of power of, by re-moulding, A., 898.
- Recrystallisation apparatus, A., 929.
- Rectifiers, mercury vapour, (P.), B., 449.
 See also under Electric and Electrolytic.
- "Red Arrow," effect of soap on toxicity of, B., 508.
- Red lead, B., 596.
 production of, (P.), B., 213, 294.
 protective action of, on iron, B., 298.
 action of, with linseed oil, B., 460.
 colorimetric determination of iron in, B., 552.
- Red lead, determination of oxygen in, B., 246.
- Redoxase, carbohydrate, A., 390.
- Reductase, reactivation of, in washed yeast, A., 985.
- Reduction with acid and metal, A., 910.
- Redwood bark, manufacture of sheathing lumber from, (P.), B., 1052.
- Reflecting materials, production of, (P.), B., 213.
- Reformatsky reaction, modification of, A., 844.
- Refraction of dissolved electrolytes, A., 680, 1122.
 mechanical double, of liquids in relation to chemical constitution, A., 286.
- Refractive index of binary mixtures, A., 554.
 of liquids, A., 999.
 of metals, determination of, A., 30.
 of solids, immersion liquid for determination of, A., 189.
 of solutions, measurement of, A., 189, 816, 1122.
 relation between aggregate of solute and, A., 163.
- Refractometer for reactive liquids, A., 928.
 Abbé, calibration of, A., 1143.
 plane-parallel plate, A., 593.
- Refractometry, A., 669, 1141.
 application of, to mixtures and solutions, A., 793.
- Refractories, (P.), B., 842, 1141.
 manufacture of, (P.), B., 65.
 treatment of clay for, (P.), B., 65.
 for use at high temperatures, B., 841.
 use of andalusite for, B., 926.
 plastic compositions of, (P.), B., 633.
 fused alumina, flux for chemical analysis of, B., 248.
 dry-pressed, forming pressure and firing properties of, B., 64.
 graphic, manufacture of, (P.), B., 720.
 heat-resisting, production of, in electric furnace, B., 491.
 pot-clay, flow of, at high temperatures under stress, B., 883.
 special, for metallurgical research, B., 491.
 furnace-testing of, for slag-erosion, B., 113.
 spalling test for, B., 759.
 steel works' tests on, B., 677.
- Refractory articles, manufacture of, (P.), B., 158, 202*, 549, 1096.
 bodies, determination of zinc in, B., 491.
 bricks. See under Bricks.
 coatings, B., 721.
 compositions, recrystallised, (P.), B., 760.
 materials, (P.), B., 492.
 manufacture of, from magnesium silicates, (P.), B., 158.
 behaviour of, in continuous vertical retorts, B., 112.
 slagging of, B., 491, 633.
 electrical resistivity of, B., 1095.
 permeability of, to gases, B., 804.
 effect of titania on, B., 491.
 analysis of, B., 926.
 mixtures, (P.), B., 492.
 products, (P.), B., 65.
 manufacture of, from magnesium silicates, (P.), B., 884.
 structures, prevention of spalling of, (P.), B., 678.
- Refrigerants, (P.), B., 323, 803.
 absorbent for, (P.), B., 910.
- Refrigeration, (P.), B., 50, 94, 570.
 process and apparatus for, (P.), B., 790.
 material for, (P.), B., 518.
 working fluid for, (P.), B., 658.
- Refrigeration apparatus, (P.), B., 50, 96, 228, 426, 659, 790, 869, 911, 955, 999, 1127.
 heat exchangers for, (P.), B., 704.
 solid absorbent for, (P.), B., 952, 1080*.
 thermostats for, (P.), B., 827.
 absorption, (P.), B., 3, 183, 228, 702, 869, 912, 1127.
 materials for, (P.), B., 866.
 heating of, (P.), B., 96.
 compression, (P.), B., 281.
- Refrigeration machines, (P.), B., 228.
 evaporators for, (P.), B., 704.
 absorption, (P.), B., 3.
 evaporator for, (P.), B., 869.
 rectification of vapours from, (P.), B., 372.
 compression, (P.), B., 96.
- Refrigeration plant, (P.), B., 142.
 absorption, cooling and condensation in, (P.), B., 142.
 device for detection of ammonia for, (P.), B., 803.
- Refrigerators, (P.), B., 96, 323, 1125.
 heat insulation for, (P.), B., 1127.

- Refuse, utilisation of, as fuel, B., 655.
 kitchen, composition of, B., 822.
 vegetable, poisoning due to carbon dioxide from, B., 46.
- Rehmannia lutea*, action of extracts of, on blood-sugar, A., 510.
- Rennin, action of, on milk, B., 739.
- Reproduction, effect of calcium and phosphorus intake on, A., 1330.
 metabolism of women during, A., 869.
- Resacetophenone 2-acetate, A., 1305.
 phenylcarbonyl derivative, A., 210.
- Resacetophenone, ω -3:5-tetrabromo-derivative, A., 217.
- Resins, A., 847, 1299; B., 553.
 occurrence of, in plants and coal, A., 818.
 in Ruhr coal, A., 60.
 extraction of, from coal, (P.), B., 1107.
 production of, from cracked petroleum distillates, (P.), B., 261.
 modification of physical properties of, B., 238.
 optical rotation of, B., 126.
 determination of m. p. of, B., 34.
 ageing of, B., 950.
 mixtures of, with nitrocellulose solutions, B., 404.
 laminated sheets from, (P.), B., 1062.
 production of esters of, (P.), B., 309.
 acid-alcohol, (P.), B., 1062, 1147.
 aldehyde, manufacture of, (P.), B., 598.
 artificial, (P.), B., 357, 598, 1019, 1107, 1147.
 constitution of, A., 1398.
 production of, from phenols and aldehydes, (P.), B., 853.
 mixing apparatus for, (P.), B., 867.
 production of thin plates of, (P.), B., 34.
 aldehyde-amine, (P.), B., 503.
 aldehyde-amine, infusible, manufacture of solutions of, (P.), B., 503.
 carbamide-aldehyde, production of, (P.), B., 170.
- Cativa, B., 451.
- coumarone-indene, (P.), B., 309.
- cresol- and phenol-formaldehyde, B., 553.
- elemi Manila, elemic acid from, A., 960.
 resin acid from, A., 961.
- euphorbium, A., 625, 847.
- furfural, B., 1018; (P.), B., 309.
- jack pine, B., 728.
- low-grade, treatment of, (P.), B., 852.
- natural and artificial, refining of, (P.), B., 1062.
- paracoumarone, production of, (P.), B., 1107.
- phenol, production of, (P.), B., 687.
 as moulding composition, B., 852.
 colourless and transparent, (P.), B., 503.
- phenol-aldehyde, manufacture of coating compositions and varnishes from, (P.), B., 769.
 mouldable mixtures from, (P.), B., 1107.
- phenol-carbohydrate, production of, (P.), B., 128.
- phenol-formaldehyde, constitution of, B., 212.
 application of low-temperature tars in production of, B., 685.
 decolorisation of, (P.), B., 405.
 plasticiser for, (P.), B., 687.
 manufacture of plates, etc., from, (P.), B., 895.
 combination of tung oil with, (P.), B., 1019.
 transparent, production of, (P.), B., 985, 1107.
- synthetic, (P.), B., 171, 262, 357, 405, 1019.
 manufacture of, (P.), B., 128, 170, 213, 262, 598, 686, 687, 728, 852, 853, 936, 1107.
 and their use, (P.), B., 170, 171.
 from alkali-lignin, B., 502.
 from chlorinated toluol and phenol, (P.), B., 936.
 and articles made therefrom, (P.), B., 984.
 hardening and moulding of, (P.), B., 73.
 moulding of, (P.), B., 643, 1062, 1147.
 decolorisation of, (P.), B., 405.
 application of, to surfaces, (P.), B., 728.
 protective coatings of, (P.), B., 127.
 coating of metals with, (P.), B., 262.
 insulation with, B., 1104.
 manufacture of bonded abrasive articles from, (P.), B., 729.
 manufacture of decorative objects of, (P.), B., 262.
 manufacture of hollow objects of, (P.), B., 598.
 manufacture of ornamental articles from, (P.), B., 729.
 in enamels and house paints, B., 33.
 detection and identification of, B., 852.
- vinyl ester, production of, (P.), B., 853.
- white, manufacture of, (P.), B., 598.
- Resins, detection of colophony in, by Donath's reaction, B., 768.
- Resin acids, derivatives of, (P.), B., 1019, 1062.
- Resinous compositions, (P.), B., 597, 598, 1019.
 manufacture of, (P.), B., 73, 642, 729, 818, 853, 1019.
 fibrous, manufacture of, (P.), B., 687.
- Resinous materials, treatment of, (P.), B., 593.
- Resinous products, manufacture of, (P.), B., 642, 687.
 purification of, (P.), B., 1019.
- Resistance, metallic and electrolytic, measurement of, A., 43.
 See also under Electric and Electrical.
- Resitols, manufacture of, (P.), B., 818.
- Resorcinol, crystal structure of, A., 1116.
 equilibrium of, with carbamide, A., 567.
 condensation of, with ketones, A., 627.
 and ethylacetoacetates, to form coumarins, A., 962.
 alkyl and aralkyl ethers, A., 1289.
 β -chloroallyl ether, A., 952.
 dimethyl ether, reactions of, A., 487, 1155.
 dimethyl and 1-methyl 3-ethyl ethers, bromonitro-, A., 617.
 propyl ethers, A., 1153.
- Resorcinol, *di*- and *tri*-bromo-, mercuric derivatives of, A., 1435.
 bromodinitro-, and 2-bromo-6-nitro-4-amino-, acetyl derivative, A., 477.
trinitro-, crystal structure of, A., 551.
- Resorcinolarsinic acid, homologues of, A., 1434.
- Resorcinol-tetrabromosulphonophthalein, A., 221.
- Resorcinoldi- β -phenylethyl ether, A., 233.
- Resorcinoltetraiodosulphonophthalein, A., 221.
- Resorcinol-lignin, and its acetyl derivative, A., 941.
- Resorcinol-3-nitrophthalein, A., 841.
- Resorcinol- β -phenylpropionic acid, β -thio-, A., 233.
- β -Resorcylaldehyde, diacetyl derivative, A., 353.
- β -Resorcylaldehyde, mercuration of, A., 106.
- Respiration, measurement of, A., 1099, 1182.
 effect of organic dyes on, A., 857.
 inhibition of, by hydrocyanic acid, A., 639.
 deep, tetany of, A., 375.
- Respiratory appliances, with automatic control of nutrient gas, (P.), B., 744.
 helmets, (P.), B., 656.
- Respiratory cartridges, acceleration of action of, (P.), B., 46.
- Respiratory enzymes. See under Enzymes.
- Respiratory metabolism, effect of injection of sugars on, A., 512.
- Retene, A., 1297.
 substitution derivatives of, A., 226.
- Retenecarboxylic acid, and its sodium salt and derivatives, A., 226.
- Retenequinonecarboxylic acid, A., 226.
- Retenequinonesulphonic acids, potassium salts, A., 227.
- Retenesulphonic acids, isomeric, and their salts and derivatives, A., 227.
- Retenols, and their salts, A., 227.
- Reticulocytes, composition of, A., 383.
 staining of, A., 1174.
- Retorts, (P.), B., 9, 909.
 heating of, (P.), B., 189.
 doors for, (P.), B., 474.
 brickwork settings of, (P.), B., 96.
 tar firing of, B., 912.
 for coal carbonisation, (P.), B., 430.
 for gas and coke production, straightening walls of, (P.), B., 104.
 for distillation of coal, peat, etc., (P.), B., 285.
 for distillation of oil-shale, (P.), B., 236, 1130.
- carbonisation, liquid seal for gas offtakes of, (P.), B., 916.
- low-temperature carbonisation, heating of, (P.), B., 575.
- distillation, (P.), B., 378.
- gas, doors of, (P.), B., 104.
 firing of, (P.), B., 913.
 vertical, (P.), B., 433.
- vertical, carbonisation of coal in, B., 97; (P.), B., 1129.
 with crossovers, (P.), B., 525.
- r*-Rhamnitol, A., 62.
- d*- and *l*-Rhamnitol trihydrates, A., 62.
 crystal structure of, A., 551.
- l*- α -Rhamnohexose, dibenzyl-, phenyl-*p*-chlorobenzyl-, and phenyl-benzyl-hydrazones, A., 938.
- Rhamnose, X-ray examination of, A., 1275.
 bacterial fermentation of, A., 1334.
- l*-Rhamnose, dibenzyl- and phenyl-*p*-chlorobenzyl-hydrazones, A., 938.

- Rhenium, A., 583.**
 physical properties of, A., 288.
 physical and chemical properties of, A., 448, 698.
 geochemistry of, A., 707.
 atomic weight and isotopes of, A., 1208.
 isotopes of, A., 666.
 spectrum of, A., 664, 1345.
 aro spectrum of, A., 404, 540, 993.
 magnetic properties of, A., 153.
 lattice constants of, A., 1001.
 manufacture of filaments; etc., from, (P.), B., 815.
 preparation of oxidation catalyst from, (P.), B., 639.
Rhenium alloys with tungsten, melting point of, A., 676.
Rhenium compounds, pure, production of, A., 53.
 ter- and quadri-valent, A., 1382.
Rhenium chlorides, A., 1255.
 selenides and sulphides, A., 924, 1128.
 Per-rhenic acid, density of solutions of, A., 1223.
 Thioper-rhenic acid, A., 1255.
 Thioper-rhenates, A., 924.
Rhenium detection, determination, and separation:—
 analytical chemistry of, A., 328.
 detection and separation of, A., 1025.
 determination of, as thallium per-rhenate, A., 589.
 separation of, from molybdenum, A., 1143.
Rheostat, lampbank, A., 929.
Rheumatism, acute, blood constituents in, with salicylate treatment, A., 978.
***Rhizobium japonicum* and *meliloti*, changes produced in nitrogenous compounds by, A., 876; B., 559.**
***Rhizoma filicis*, influence of source and time of collection on, B., 611.**
***Rhizopus nigricans*, effect of copper, manganese and zinc on growth of, A., 876.**
Rhodamine-B, absorption spectra of solutions of, A., 996.
 polarised fluorescence of solutions of, A., 22.
Rhodanines, A., 1170.
Rhodoose dibenzylhydrazone, A., 938.
Rhodinol, determination of, in presence of geraniol and nerol, A., 972.
Rhodium, allotropism of, A., 791.
 spark spectrum of, A., 1344.
 photo-electric and thermionic properties of, A., 277.
 specific heat of, A., 674.
Rhodium trifluoride, crystal structure of, A., 1359.
Rhodium organic compounds, A., 1141.
Rhodium vessels, use of, for high temperature equilibria, A., 911.
***Rhododendron hunnewellianum* (Nao-Yang-Hua), toxic principle from, A., 870.**
***Rhododendron japonicum*, sparassol from roots of, A., 777.**
***Rhodymenia palmata*, chromophore group of, A., 1436.**
Rhubarb, constituents of, B., 1073.
***Rhus cotinus*, tanning with extracts of, B., 36.**
***Rhus succedanea*, rhusinic acid from, A., 775.**
Rhusinic acid, A., 775.
Ribbons, artificial, manufacture of, (P.), B., 343, 878.
Ribes, chemical eradication of, B., 776.
***Ribes rubruno*, oil from seeds of, B., 450.**
d-Ribose, dibenzyl- and phenyl-p-chlorobenzyl-hydrazones, A., 938.
Rice, cultivation of, (P.), B., 361.
 ripening of grains of, A., 774.
 seedlings, effect of three-salt nutrients on, A., 1340.
 cleaning and preparation of, (P.), B., 272.
 availability of nitrogen in green manure for, B., 774.
 hardening of foods prepared from, B., 1153.
 amylase from, A., 1189.
 wax in polishings from, B., 125.
 flaked, saccharification of, with acids, B., 778.
 Japanese, hardening of, B., 461.
 polished, globulins of, A., 990.
 oryzanin crystals of, A., 881.
Rice bran, as preventive of perosis, A., 1181.
Rice finches, testing of antimalarial action on, A., 871.
Rice hulls, detection of, in bran and sharps, B., 219.
Ricinoleic acid, dehydration of, A., 198.
 ozonisation products of, A., 602.
 sulphuric ester, preparation and properties of alkali acid salts of, B., 894.
 and its alkali salts, solubilities of, B., 211.
- Rickets, A., 989.**
 effect of diet on, A., 989.
 control of, on cereal diet, A., 118.
 absorption spectrum of blood in, A., 383.
 inorganic phosphorus in blood in, A., 254.
 calcium content of striated muscle in, A., 254.
 calcium and phosphorus metabolism of infants in, A., 511.
 effect of magnesium salts in, A., 1451.
 maize component of diet inducing, A., 383.
 action of ozono in, A., 531.
 effect of phosphorus in, A., 978.
 relation between phosphorus, chloride, and hydrogen carbonate in normal rabbits' serum and in, A., 383.
 effect of inadequate amounts of viosterol on healing of, A., 881.
 addition of vitamin-A to diet in, A., 772.
 vitamin-A in hogs' liver in, A., 269.
 induction of tetany in, A., 759.
 in chicks, A., 1465.
 ration for production of, A., 1084.
 in rats, A., 1181.
 "incurable," A., 979.
 low-phosphorus, healing in, A., 759.
Rings, formation of, and polymerisation, A., 193, 205.
 heterocyclic, containing mercury atoms, formation of, A., 106, 244.
 strainless monocyclic, A., 1055.
Ring systems, unsaturated, graduated additive powers of, A., 489.
Ringer's solution, effect of, on blood-vessel of frogs, A., 118.
Rissic acid, structure of, and its ethyl ester, A., 1415.
 and its methyl ester, A., 490.
River water. See under Water.
Roads, construction of, (P.), B., 397.
 materials for, (P.), B., 679, 926, 975, 1096*.
 drying apparatus for, (P.), B., 866.
 use of asphalt and bitumens for, B., 974.
 manufacture of mastic asphalt, etc., for, (P.), B., 634.
 bituminous dispersions for, (P.), B., 795.
 bituminous emulsions for, (P.), B., 619.
 bituminous material for, (P.), B., 203.
 manufacture of "Bitural" for, B., 202.
 tar for, (P.), B., 192, 1037.
 tar emulsions for, (P.), B., 619, 679.
 tractor device for treatment of, with chemicals, (P.), B., 635.
 treatment of bituminous facings for, (P.), B., 397.
 surface treatment of, B., 441.
 asphaltic or bitumastic materials for, (P.), B., 160.
 emulsions for, (P.), B., 926.
 treatment of asphalt emulsions for, (P.), B., 872.
 treatment of tars for, (P.), B., 914.
 apparatus for spraying surfacing materials for, (P.), B., 114.
 making of cold tar coverings for, (P.), B., 590.
 removal of slipperiness from surfaces of, (P.), B., 114.
 silication of limestone for, B., 634.
 bituminous, construction of, (P.), B., 351, 1096.
Roasting apparatus, (P.), B., 614.
Rochelle salt, spectrum of, A., 21.
 electromechanical properties of crystals of, A., 148.
Rocks, wearing of, in water, A., 1390.
 radium in, A., 332.
 alkaline, in S.E. Idaho, A., 930.
 basic alkali, of Scawt Hill, Co. Antrim, A., 595.
 beryllium silicate, gravimetric microanalysis of, A., 927.
 blasting, B., 352.
 of Gwalior series, helium ratios and age of, A., 17.
 magmatic, classification of, A., 1391.
 strontium content of, A., 1391.
 Russian, A., 930.
 Spanish, vanadium in, A., 60.
 trap, of the Chitaldrug schist belt, A., 595.
 volcanic, from Crimea, A., 1265.
 elements of the vanadium group in, A., 191.
 analysis of, B., 491.
 calculation of, A., 1390.
 separation of silicic acid in determination of metals in, A., 700.
Rock-salt, mechanical properties of, A., 1117.
 optical constants of, A., 20.
 Raman effect in, A., 1352.
 effect of deformation on spectrum of, A., 22.
 conductivity of, A., 785.
 in relation to field intensity, A., 1112.

Rock-salt, electrical discharge in, A., 894.
 tensile strength of, after water treatment, A., 791.
 crystal structure of, A., 1359.
 recrystallisation of, A., 288, 1217.
 effect of pressure on, A., 1360.
 effect of heating on formation of ultramicroscopic particles in, A., 563.
 X-ray excited, photo-electric conductivity of, A., 285.
 See also Sodium chloride.

Rodents, control of, by means of thallium salts, A., 870.

Romanechite, A., 707.

Roofs, materials for construction of, (P.), B., 926, 975.
 copper-clad materials for, (P.), B., 160, 721.
 artificially coloured granules for, (P.), B., 843.

Rosickyite, A., 1390.

Rosin. See Colophony.

Rosin oil, production of, (P.), B., 686.

Rosinduline as oxidation-reduction indicator, A., 687.
 formation of semiquinone as intermediary reduction product of, A., 1309.

Rosinic acid, lead salt, preparation and autoxidation of, A., 847.

Rotation, and structure, A., 1413.
 and chemical constitution, A., 231, 848, 962, 1160.
 and atomic dimensions, A., 826, 1355.
 effect of X-rays on, A., 24.
 influence of solvents on, A., 1113.
 magnetic, of fused organic compounds, A., 148, 1000.
 specific, change of, in passing from liquid to gaseous state, A., 411.
 ultra-violet, apparatus for measurement of, A., 455.
 magneto-electric, A., 787, 1000.
 paramagnetic, in crystals, A., 287.

Rotenol, cleavage of, and its derivatives, A., 227, 1065.

Rotenone, A., 227, 490, 491, 847, 1065, 1155, 1298, 1415.
 constitution of, A., 847.
 isomerisation of, A., 491.
 orientation of methoxy-groups in, A., 1298.
 decomposition of, A., 735.
 relation between deguelin, tephrosin, and, A., 357.
 as insecticide, B., 268, 508.
 changes in toxicity of, B., 508.
 toxicity of nicotine and, to *Aphis rumicis* and mosquito larvae, B., 990.
 comparison of nicotine, pyrethrum and, as insecticides, B., 508.
 as mothproofing agent for wool, B., 242.
 action of, on mammals, A., 120.
 derivatives, relation of optical activity of, to structure of tubaie acid, A., 1298.
 alkali fusion of, A., 227.

iso-Rotenone isooxime, A., 847.

n- and iso-Rotenones, toxicity of, to goldfish, A., 260.

dl-Rotenonic acid, A., 1298.

Rowan berries, Norwegian, sorbitol content of, A., 776.

Rubber, constitution of, B., 73.
 main-valency chain theory and, B., 172.
 structure and double refraction of, B., 74.
 X-ray analysis of, A., 150.
 manufacture of, (P.), B., 79*, 264, 643, 1063.
 accelerators and anti-agers in, B., 554.
 extraction apparatus for, B., 909.
 treatment of, (P.), B., 77, 407.
 accelerators for, (P.), B., 358.
 mechanical properties of, in compression at low temperature, B., 171.
 physical testing of, B., 74.
 machine for testing tensile properties of, B., 937.
 determination of plasticity of, (P.), B., 869.
 permeability of, to air and factors influencing it, B., 853.
 effect of storage conditions on hardness of, B., 35.
 apparatus for testing hardness and measuring thickness of, B., 74.
 measurement of flex-cracking resistance of, B., 262.
 testing of, with ozone, B., 171.
 effect of temperature, pressure, and frequency on electrical properties of, B., 35.
 thermochemistry of, B., 1108.
 heat of combustion of, B., 35.
 heat of vulcanisation of, B., 1108.
 swelling pressure of, A., 429.
 structure viscosity of solutions of, A., 38.

Rubber, dispersion of, in water, (P.), B., 554.
 dispersions, production of, for waterproofing, (P.), B., 172.
 aqueous, concentration of, (P.), B., 599.
 treatment of, (P.), B., 77.
 dispersion of pigments in, (P.), B., 730.
 dispersion of gas black in mixtures of, B., 75.
 production of aqueous emulsions of, (P.), B., 504.
 compounding of, B., 1108; (P.), B., 599, 730, 1148.
 sulphur and resin composition for, (P.), B., 644.
 soot as ingredient for, B., 819.
 vulcanisation of, B., 75; (P.), B., 78, 264, 407, 504, 554, 600, 644, 731, 819, 1020, 1063, 1148.
 volume increase in, B., 75.
 accelerators for, (P.), B., 129*, 645, 667, 668, 687, 688, 854, 896, 937, 1021, 1063.
 luminescence of, B., 1020.
 combination of organic accelerators for, B., 643, 1108.
 mono- and di-carbalkoxydiarythiourcas as accelerators in, (P.), B., 173*.
 piperidine derivatives as accelerators for, B., 769.
 moulds for, (P.), B., 897, 1021.
 by hot-air, B., 171.
 with aldol condensation product, (P.), B., 264.
 in presence of aniline sulphate, B., 75.
 in presence of basic azo-dyes, B., 75.
 relation between absorptive power of carbon and its effect on, B., 35.
 to leather, (P.), B., 213*, 358.
 testing of, B., 35.
 reinforced with carbon, for vulcanising, (P.), B., 78.
 manufacture of vulcanised articles from, (P.), B., 310.
 ageing of, B., 950, 1147.
 compounded with china clay, B., 75.
 anti-agers for, (P.), B., 731, 854, 896, 1021, 1063.
 oxidation of, B., 75, 358.
 anti-oxidants for, B., 76; (P.), B., 504, 579, 875, 896, 985, 1063, 1148.
 softening agents for, (P.), B., 1021.
 effect of anti-oxidants on, B., 262.
 preservation of, (P.), B., 35*, 599, 600, 854, 937*, 1148.
 degradation of solutions of, A., 683.
 recovery of, from waste tyres, B., 730.
 fillers for, B., 1020, 1062, 1108.
 effect of fillers on calendering of, B., 34.
 prevention of scorching of, (P.), B., 688.
 penetration of textiles, fabrics and threads by, B., 985.
 separation of solvent from, B., 503.
 nerve of, B., 985.
 manufacture of products resembling, from organic isocolloids, (P.), B., 452.
 engineering applications of, B., 569.
 effect of carbon black on, B., 1108.
 manganese and iron contents of types of, and their fillers, B., 406.
 smoke for reinforcement of, B., 74.
 uniting of, to other substances, (P.), B., 35*.
 bonding material between metal and, (P.), B., 407.
 cement for, (P.), B., 1020.
 waterproof cement for securing metal to, (P.), B., 265.
 coating of, with cellulosic derivatives, (P.), B., 263.
 production of coating materials from, (P.), B., 984.
 coating of fabrics with, (P.), B., 674.
 coating of fibrous materials with, (P.), B., 770.
 coating of metals with, (P.), B., 1148.
 coating of surfaces with, (P.), B., 504, 731.
 impregnation of fabrics with, B., 643.
 impregnation of fibrous materials with, (P.), B., 876.
 reproduction of images on surfaces of, (P.), B., 78.
 colouring of, (P.), B., 77, 1020.
 colours for, B., 895.
 organic pigments for, B., 406.
 disintegration machine for, (P.), B., 2.
 manufacture of conversion products of, (P.), B., 263.
 manufacture of heat-plastic derivatives of, (P.), B., 77.
 manufacture of masses resembling, (P.), B., 172, 407.
 compositions of paper and, (P.), B., 407, 1006*.
 manufacture of tread stock of, (P.), B., 264.
 substitutes, manufacture of, (P.), B., 771, 937, 1148.
 preparation of micro-sections of, B., 358.
 detection and determination of, in its mixtures with asphalt, B., 769.

- Rubber, determination of sulphur in, B., 487, 1108.
- Rubber, age-resisting, (P.), B., 504.
- artificial, manufacture of, (P.), B., 78, 264, 644, 730.
- vulcanisation of, (P.), B., 78.
- determination of sulphur in, B., 643.
- chlorinated, composition containing, (P.), B., 77.
- coloured, manufacture of, (P.), B., 599.
- crêpe, effect of adding sodium bisulphite to latex, on plasticity of, B., 75.
- fractionally coagulated, B., 34.
- crude and reclaimed, effect of pigment reinforcement on, B., 75.
- crystallised, B., 769.
- microporous, B., 985.
- production of, (P.), B., 644.
- milled, effect of storage on, B., 730.
- natural, colouring of, (P.), B., 77.
- fractional precipitation of, B., 853.
- pyrolysis of, in presence of metallic oxides, A., 357.
- and artificial, preservation of, (P.), B., 770.
- and synthetic, A., 357; B., 853.
- plantation, variation in plasticity of, after storage, B., 937.
- plastic, manufacture of, (P.), B., 730.
- porous, for filtration and absorption, (P.), B., 77.
- raw, manganese in, B., 729.
- reclaimed, B., 76, 1063; (P.), B., 770.
- manufacture of, B., 76.
- dispersion of, (P.), B., 77.
- testing of, B., 76.
- value of rubber hydrocarbon in, B., 985.
- effect of drying temperature of scrap on quality of, B., 854.
- determination of alkalinity of, B., 406.
- sheet, production of, (P.), B., 76.
- from rubber latex, (P.), B., 129.
- storage and packing of, (P.), B., 265.
- perforation of, for aerating apparatus, (P.), B., 424.
- smoked, effect of keeping coagulum on plasticity of, B., 74.
- soft, making electrical contact with ebonite and, B., 76.
- stock, containing copper, behaviour of anti-oxidants in, B., 309.
- stretched, occurrence of "air-cracking" in, B., 730.
- vulcanised, effect of immersion in boiling water on, B., 730.
- dispersion of, (P.), B., 172.
- density of, B., 1108.
- swelling of, in liquids, B., 34.
- high-speed tensile experiments with, B., 74.
- increase of resistance of, to wear by tin and cadmium selenides, B., 896.
- regeneration of, (P.), B., 645.
- old, reconditioning of, (P.), B., 310.
- determination of carbon black in, B., 1108.
- waste, utilisation of, B., 129.
- recovery of, (P.), B., 1063.
- Rubber articles, manufacture of, (P.), B., 78, 504, 644, 731, 770, 854, 1020.
- from latex, (P.), B., 644.
- for aeroplanes, etc., (P.), B., 265.
- heat treatment of, (P.), B., 78.
- vulcanisation of, (P.), B., 854.
- by heated gases, (P.), B., 78.
- heat loss in, (P.), B., 264.
- softening of, (P.), B., 1063.
- metal moulds for, (P.), B., 1109.
- production of surface effects on, (P.), B., 407.
- production of suede-like nap on, (P.), B., 644.
- coloured, manufacture of, (P.), B., 599, 896.
- from rubber dispersions, (P.), B., 172.
- ornamented, (P.), B., 1020, 1021.
- porous, manufacture of, (P.), B., 770, 896.
- vulcanised, manufacture of, (P.), B., 264.
- Rubber compositions, (P.), B., 263, 600, 1020.
- production of, (P.), B., 77, 599.
- for electrical insulation, (P.), B., 731.
- containing decarboxylated rosin, (P.), B., 599.
- adhesive, (P.), B., 645, 1147.
- age-resistant, production of, (P.), B., 263.
- artificial, manufacture of, (P.), B., 771.
- thermoplastic, manufacture of, (P.), B., 644.
- Rubber compounds, manufacture of, (P.), B., 770.
- plasticity changes in, on heating, B., 937.
- reduction of tackiness of, (P.), B., 645.
- water absorption of, B., 213.
- Rubber compounds, reinforcement of, with pigment mixtures, B., 452.
- behaviour of fatty acids in, B., 75.
- tacky, manufacture of, (P.), B., 896.
- vulcanised, hard spots in, B., 452.
- Rubber emulsions, manufacture of, (P.), B., 263.
- adhesives from, (P.), B., 173*.
- Rubber estates, "Serpong," manuring experiments on, B., 605.
- Rubber fabrics, production of sheen on, (P.), B., 731.
- coating of, (P.), B., 1047.
- containing cellulose derivatives, manufacture of, (P.), B., 801.
- Rubber goods, manufacture of, (P.), B., 264, 504, 644, 731, 770, 896, 986, 1020, 1021, 1148.
- from rubber dispersions, (P.), B., 172.
- ageing of cotton in, B., 15.
- production of sheen on, (P.), B., 731.
- Rubber industry, chemical risks in, B., 1109.
- Rubber latex, treatment of, (P.), B., 78*, 263, 309, 599, 1148.
- treatment and preservation of, (P.), B., 406.
- preservation of, (P.), B., 172, 1147.
- spray-drying apparatus for, (P.), B., 76.
- concentration of, (P.), B., 76, 310, 599, 1020.
- concentration and purification of, (P.), B., 172, 599.
- purification of, (P.), B., 263.
- coagulation of, B., 171; (P.), B., 406, 854.
- thickening and stabilisation of, (P.), B., 406, 1147.
- surface tension of, B., 452.
- chemistry of, B., 554, 769, 985.
- rate of deposition of, on porous moulds, B., 729.
- formation of rubber strips from, (P.), B., 503.
- manufacture of adhesives from, (P.), B., 1109.
- manufacture of articles from, (P.), B., 644.
- manufacture of cement for rubber from, (P.), B., 731.
- manufacture of ribbon, sheet, etc., from, (P.), B., 687.
- bacteriology of, B., 171.
- lipins of, B., 171.
- effect of vulcanisation on, B., 171.
- serum, recovery of quebrachitol from, (P.), B., 77.
- ammoniacal, determination of p_{H} of, B., 406.
- artificial, coagulation of emulsions of, (P.), B., 643.
- balata, consistency of particles of, B., 262.
- colour reactions of, B., 1020.
- application and analysis of, B., 73.
- apparatus for determination of rubber in, B., 937.
- Rubber materials, vulcanisation of, (P.), B., 771.
- for floor coverings, (P.), B., 1109.
- waterproof, manufacture of, (P.), B., 770.
- Rubber mixtures, permeability of, B., 35.
- mixing machines for, (P.), B., 910.
- effect of iron in zinc oxide in, B., 34.
- action of lead selenide in, B., 452.
- effect of selenium in, B., 643, 1108.
- action of titanium dioxide in, B., 895.
- for imitation leather, (P.), B., 263.
- technical, electrical properties of, B., 262.
- Rubber oil, solution of organic compounds in, (P.), B., 406.
- Rubber plants, spraying experiments on, B., 734.
- Rubber products, manufacture of, (P.), B., 644, 1063.
- containing artificial silk, (P.), B., 504.
- determination of sulphur in, B., 643.
- Rubber seed, Para, constituents of, A., 131.
- Rubber seed meal, *Hevea*, as food for milk production, B., 313.
- Rubber seed oil, Para, B., 70.
- Rubber threads, tensile-testing machine for, B., 599.
- Rubber trees, use of asphalts and bitumens for wound treatment of, B., 171.
- Rubber tubing, (P.), B., 771.
- lined with metal foil, manufacture of, (P.), B., 819.
- Rubber tyres. See under Tyres.
- Rubiadin methyl ether, A., 225.
- isoRubicene, A., 1292.
- Rubidium, extraction of, from carnallite, A., 49.
- isotopes in spectrum of, A., 887.
- absorption spectrum of vapour of, A., 992.
- series spectra of, A., 993.
- spark spectrum of, A., 1204.
- nuclear moment of, A., 888.
- Rubidium hypophosphite, A., 443.
- iodide, optical dissociation of, A., 1103.
- oxide, pure, extraction of, from beryl, B., 438.

Rubidium nitrate, viscosity and density of solutions of, A., 423.
 polymorphism of, and its equilibrium with rubidium chloride, A., 432.
 nitride, A., 50.
 neodymium sulphate, A., 321.
 Rubidium organic compounds:—
 Rubidium benzoylacetone, A., 443.
 Rubidium, determination of, A., 1259.
 Rubies, determination of chromium in, A., 455.
 Rubrene, thermochemistry of, A., 171.
 biochemistry of, A., 128.
*iso*Rubrene dioxide, elimination of phenyl group from, A., 1151.
 Rum, evaluation of, B., 859.
 ester values of, B., 177.
 Ruminants, digestive glands of, A., 757.
 Rust. See Corrosion.
 Rust mites, destruction of, on citrus, B., 39.
Ruta, essential oil from, B., 945.
 Ruthenium, constitution of, A., 280.
 atomic weight and isotopes of, A., 1208.
 Ruthenium bases (*rutheniumammynes*):—
 Aquotetramminoruthenium compounds, A., 184.
 Ruthenium compounds, complex, A., 1256, 1383.
 Ruthenium tetroxide as fixative, A., 1178.
 Rutile, X-ray spectrum of, A., 671.
 Rydberg formula, A., 1346.
 Rye, mucilage from, A., 535.
 Rye flour, detection of, B., 859.
 in wheat flour, B., 219.
 determination of, in flour, B., 511.
 Rye groats, fermentation of, A., 985.
 Rye meal, autosaccharification of, A., 1331.
 Rye oil, B., 210.

S.

Sabinene, hydrogenation of, catalytically, A., 736.
 Saccharic acid, formation of, by moulds, A., 524.
 calcium salt, detection of, in cream, B., 220.
 Saccharin (*o*-benzoic sulphinide), value of by-products from manufacture of, in oil and fat industry, B., 30.
 sweetening power of, A., 1049.
 determination of, volumetrically, B., 753.
 Saccharinic acids, A., 1148.
Saccharomyces Johanneberg, zymatic system of, A., 263.
 Sacking, treatment of, to prevent rotting, (P.), B., 585.
 Saffron, adulteration of, with annatto, B., 531.
 Safran dye, A., 1067.
 Safrrole, birefringence of, A., 411.
 decomposition of, with methyl alcohol and alkali, A., 953.
 Sago-pith meal, nutritive value of, for pigs, B., 943.
 Salicin, effect of ethylene on hydrolysis of, by emulsin, A., 468.
 hamolytic action of, A., 860.
 Salicylaldehyde, condensation of, with its phenylhydrazono, and with benzaldehydephenylhydrazono, A., 222.
 compounds of, with alkali carbonates or hydroxides, A., 443.
 phenylhydrazono, condensation of, with benzaldehyde, A., 957.
 1-phenyl- and 1-*o*-tolyl-carbohydrazones, A., 475.
 Salicylaldimine, complex metallic salts of, A., 485.
 Salicylaldoxime as reagent for copper, A., 813.
 nickel and cobalt derivatives of, A., 353.
 Salicylic acid, production and purification of, (P.), B., 1133.
 heat of combustion of, A., 42.
 metastability of, and its use as calorimetric standard, A., 677.
 acidosis following administration of, A., 119.
 resorption of, following injection, A., 1087.
 from ointments and its determination in urine, A., 1452.
 pereiric salt, A., 182.
 dibenzylidipyridylum salt, A., 740.
 mercury salt, A., 1053.
 sodium salt, bactericidal action of, A., 527.
 excretion of, in bile, A., 509.
 determination of theobromine in theobromine compound of, B., 862.
 and 5-iodo-, esters of, A., 1054.
p-acetamidophenyl ester. See Salophen.
 ethyl ester, formation of compounds of amines with, A., 568.
 methyl ester, β -glucoside, rhamnoside and β -xyloside of, and their derivatives, A., 1401.

Salicylic acid, phenyl ester. See Salol.
 derivatives, A., 482.
 β -chloroallyl ethers of, A., 952.
 manufacture of substitution products of, (P.), B., 917.
 complex compound of, with caffeine, A., 496.
 molecular compounds of, with β -naphthylamine, phenylacetic acid and *m*-phenylenediamine, A., 483.
 mixed glycerides of, A., 1414.
 reactions of, A., 88.
 detection of, microchemically, in foods and drugs, B., 316.
 determination of, in presence of mineral acids, A., 1438.
 gravimetrically, by Lautemann's red, A., 1438.
 Salicylic acid, aminothio-, condensation of, with chlorodinitrobenzene, A., 835.
 thio-, dicyclohexyl ester, gold derivative, A., 1043.
 Salicyl chloride, preparation of, A., 221.
 Saligenin, A., 1278.
 Salipurpol, A., 1100, 1199.
 Salipurposide, constitution of, A., 1199, 1341.
 from *Salix purpurea*, A., 1100.
 Salireposide, A., 1100.
 Saliva, effect of hyperglycemia on amylolytic power of, A., 757.
 effect of aliphatic amines and their hydrochlorides on saccharification of starch by, A., 873.
 parotid, changes in composition of, after sympathetic section, A., 381.
 Salivary glands, action of extracts of, on blood, A., 657.
 permeability of, to dyes, A., 862.
Salix, biochemistry of, A., 1100, 1341.
Salix repens, glucoside from bark of, A., 1100.
 Salmine, action of protaminase on, A., 984.
 Salmon, canned, vitamins-A and -D in, B., 992.
 Salmon oil, vitamins-A and -D in, B., 992.
Salmonella pullorum, effect of temperature on production of hydrogen sulphide by, A., 656.
 sodium bisulphite as disinfectant against, in poultry-yard soils, B., 1068.
 Salol, action of phenylcarbimide on, and its phenylurethane, A., 1414.
 Salophen, manufacture of, B., 365.
 Salpamisri, constituents of, A., 777.
 Salt, common. See Sodium chloride.
 iodised, toxicity of, A., 870.
 table. See Table salt.
 Salts, mass spectra of, A., 546, 1108.
 contact potentials between, and their saturated solutions, A., 291.
 influence of adsorbed gas layers on photo-effects of, A., 285.
 dissociation of, in nitrobenzene, A., 686.
 solubility of, in liquid ammonia, A., 1365.
 apparatus for decomposition of, (P.), B., 719.
 prevention of caking of, (P.), B., 719.
 cyclic separation of, A., 902.
 production of globular bodies from, (P.), B., 63*.
 of positive ions, effect of nitro-group on colour of, A., 487.
 alkaline, carbon electrodes for electrolysis of, (P.), B., 640.
 complex, A., 181, 1126.
 fused, free energy of formation in, A., 912.
 thermodynamics of, A., 1234.
 solid, connexion between ionic mobility and rate of diffusion in, A., 171.
 uni-univalent, conductivity of, in ethyl alcohol solution, A., 43.
 See also Metallic salts.
 Salt deposits, origin of, A., 1030.
 Salt domes, A., 931.
 of gulf coastal plain in U.S.A., A., 931.
 Salt hydrates, dissociation of, A., 1010, 1244.
 Salt solutions, aqueous, physical properties of, A., 1128, 1364, 1366.
 Salvarsan (*arsphenamine*; *diaminodihydroxyarsenobenzene hydrochloride*), studies on, B., 274.
 toxicity of, A., 981.
Salvia, essential oil from, B., 945.
 Salyrgan, toxicity of merbaphen and, A., 870.
 Samarium, basicity of, A., 1261.
 Samarium iodides, A., 51.
 Sambucicyanin, A., 1099.
Sambucus nigra. See Elderberries.
 Sampling apparatus, automatic, A., 704.

- Sand or Sands, bituminous, bitumen from, B., 283.
 glass, determination of silica in, B., 491.
 magnetic. See Magnetic sands.
 moulding, treatment of, (P.), B., 300.
 influence of colloidal ferric hydroxide on properties of, B., 722.
 for cores, (P.), B., 926.
 Norfolk, influence of inorganic nitrogen compounds on, B., 174.
 oil, treatment of, B., 187.
 activation of, and their use in adsorption, B., 375.
 determination of, in vegetable feeding-stuffs, B., 564, 1121.
 Sandal-seed oil, B., 894.
 Sandalwood oil, Queensland, B., 463.
 Sandstone, crystallised, A., 1030.
 Sanguinarine, A., 1311.
 Santene, synthesis of, A., 849.
 γ -Santenol, A., 849.
 Santonin, A., 764.
 constitution of, A., 227, 1066.
 antiglycosuric action of, A., 1087.
 excretion of, A., 517.
 distinction between artemisin and, microchemically, A., 961.
 derivatives, synthesis of, A., 89, 1066.
 determination of, volumetrically, A., 752.
 in "Trochisci santonini," B., 611.
*r-desmotropo*Santonin, and its analogues, synthesis of, (P.), B., 463.
 Santonins, constitution of, and their derivatives, and dichloro-, A., 490.
 Santonin series, A., 490.
 Santoninamide, A., 1453.
 Sapocresols, B., 1124.
 Saponins, distribution of, A., 1100.
 in plants, A., 400.
 spreading of, on aqueous surfaces, A., 904.
 hæmolytic by, A., 974.
 toxicity of, A., 1327.
 Saponin group, A., 1159.
 Sapote oil, B., 816.
 Sapphirine from Vizagapatam, A., 595.
Saprolegnia, effect of radium on chondriome of, A., 272.
 Sarcinite from Monte Somma, A., 706.
 Sarcoma, oxygen content of blood in, A., 114.
 chicken, entity transmitting, A., 1323.
 Jensen, respiration of, A., 1083.
 rats', mineral metabolism in, A., 976.
 methylglyoxal in, A., 1180.
 Rous, cancer-producing substances of, A., 1323.
 chicken, carcinogenetic agent of, A., 864.
 tumour-inhibiting substance in, A., 1445.
 Sarcosine, preparation of, A., 1402.
Sarcosporidia, hæmotoxin in, A., 394.
 Sardines, canned, analysis of oil in, B., 944.
 red colour of oil in, B., 220.
Sarothamnus scoparius, precursors of black pigments of, A., 1101.
 Sauerkraut, effect of culture inoculation on, B., 317.
 fermentation of, B., 1024.
 vitamin-C in, A., 399.
 canned, vitamin-C content of, B., 513.
 Sawdust, apparatus for destructive distillation of, (P.), B., 143.
 acid-treated, microscopy of, A., 883.
 detection of, in bran and sharps, B., 219.
 Scale, prevention of, in boilers, evaporators, etc., (P.), B., 423.
 Scandium monoxide, band spectrum of, A., 540, 1210.
 Seapolites, A., 594.
 Schaumspat, origin of, A., 596.
 "Scheiber" oil, constants of, B., 449.
 Schiff's bases, reduction of, A., 81.
 Schrödinger's constant, A., 891.
 Schüller-Christian disease, lipin deposits in, A., 115.
 Schweinfurt-green, B., 126.
 Sciaenids, A., 737.
 Sciaenids, and its derivatives, A., 94, 737.
 Sciaenoid acid, A., 737.
 Sclerosis from cholesterol or ergosterol, action of iodine on, A., 1320.
 Scopoletin, synthesis of, A., 737, 843.
 Scouring of fibrous materials, (P.), B., 486.
 Scouring compositions, production of, (P.), B., 169.
 Screening apparatus, (P.), B., 94, 519.
 Scums, prevention of formation of, (P.), B., 465*.
- Scurvy, metabolism in, A., 760.
 chloride and water content of muscle, liver, and kidney in, A., 383.
 chlorides in serum and their excretion in, A., 254.
 experimental, A., 760.
Scylliorhinus canicula, enzyme in hatching gland of, A., 1322.
 Seas, tropical, bacterial chalk deposition in, A., 985.
 Sea-urchins, inhibition of membrane-formation and segmentation by coelomic fluid of, A., 112.
 eggs of. See under Eggs.
 Sealing of substances in ampullæ, A., 705.
 Sealing wax, manufacture of, (P.), B., 937.
 Seamanite from Iron County, Michigan, A., 817.
 Seaweed, treatment of, (P.), B., 972.
 apparatus for calcination of, (P.), B., 102.
 Sebacheptadecylamic acid, and its derivatives, A., 77.
 Secretions, internal, A., 1193.
 Sediments, weighing of, as precipitated, (P.), B., 787.
 fine, lamp for detection of, A., 593.
 recent and fossil, determination of chlorophyll in, A., 752.
 Sedimentation apparatus, overload indicator for, (P.), B., 953.
 Seeds, soaking treatment of, (P.), B., 132.
 effect of treatment on longevity of, B., 1112.
 dressing of, (P.), B., 176*.
 influence of inorganic ions on properties of, A., 132.
 germination of, in dark, in relation to vitamin-D, A., 989.
 catalase and germinative activity of, B., 775.
 phenolase activity in relation to viability of, A., 774.
 peptisation of proteins in, A., 1098.
 starch in, A., 535.
 biochemistry and histochemistry of, A., 133.
 toxicity of nickel and cyanogen compounds to, B., 604.
 disinfection of, (P.), B., 361.
 disinfectants for, (P.), B., 648, 990.
 non-hygroscopic disinfectant for, (P.), B., 692.
 fungicides for, (P.), B., 176.
 preservation and transport of, in tropical and sub-tropical countries, (P.), B., 313.
 determination of quality of, from enzyme content, A., 131.
 economic, physical chemistry of germination of, A., 882.
 oleaginous, from Angola, B., 400.
 oil-bearing, respiration of, A., 532.
 tree, treatment to shorten rest period of, B., 857.
 analysis of, B., 775.
 determination of allantoin in, A., 1080.
 determination of oil content of, B., 595.
 Selachyl alcohol, structure of, A., 62.
 Selenium, atomic weight and isotopes of, A., 1208.
 spectrum of, A., 664, 1204, 1344.
K-absorption spectrum of, A., 405.
 crystal structure of, A., 414.
 X-ray structure of mixed crystals of sulphur and, A., 788.
 photo-E.M.F. in single crystals of, A., 9.
 effect of, in rubber mixes, B., 643.
 colloidal, formation of, A., 424.
 light-sensitive, temperature compensation of, (P.), B., 499.
 stabilisation of, (P.), B., 498.
 Selenium alloys with bismuth, A., 296.
 Selenium di- and tetra-bromides, A., 1117.
 tetrachloride, vapour pressure of, A., 294.
 dioxide, use of, in glass, B., 758.
 reactions of, with halogen acids, A., 923.
 trioxide, existence of, A., 1255.
 Selenides, determination of, in presence of selenides, A., 813.
 Selenides, A., 809.
 natural, analysis of, A., 813.
 Selenium organic compounds, A., 218.
 manufacture of, (P.), B., 712.
 heterocyclic, A., 373.
 polymorphous, A., 155.
 Selenocyanammines, A., 183.
 Selenium determination and separation :—
 determination of, A., 185.
 volumetrically, B., 537.
 and its separation from tellurium, A., 186.
*cyclo*Selenohexane, and its polymerides, and their salts, A., 373.
 Selenoquinol, A., 218.
 1:4-Selenoxan, and its salts and derivatives, A., 502.
 Selenine, relationship of, with eudesmol, and its dihydrochloride, A., 1302.

- Semen, detection of, for forensic purposes, A., 861, 1082.
- Semicarbazide, reaction of, with benzylacetone, A., 1035.
- determination of, by oxidation, A., 925.
- Semicarbazide, *m*-amino-, benzoyl derivative. See Cryogenin.
- Semicarbazides, thio-, condensation of, with ethyl chloroacetate and α -chloroacetoacetate, A., 634, 1170.
- Semicarbazone, $C_8H_{13}ON_3$, from beech wood creosote, B., 660.
- Semicarbazones, 2-substituted, action of amines on, A., 613.
- Semiquinones, true, formation of, A., 966.
- Sempervine, and its salts, A., 1172.
- Senecio aureus*, constituents of, A., 1200.
- Senegin, and its fission products, A., 357.
- Separating funnels, A., 330.
- Separation of dry materials, (P.), B., 49, 519.
- Separation apparatus, (P.), B., 94, 182.
- Separation tanks, (P.), B., 280.
- Separators, (P.), B., 746.
- for crystals or molasses, B., 421.
- for gases and liquids, (P.), B., 789.
- for liquids, (P.), B., 183, 1029.
- for solids, (P.), B., 787, 826.
- air, (P.), B., 786.
- centrifugal, (P.), B., 49, 163, 280, 519, 659, 703, 787, 910, 952, 953.
- production of conical discs for, (P.), B., 520.
- lubrication of, (P.), B., 426.
- for liquids containing solids, (P.), B., 322.
- for liquids and finely divided solids, (P.), B., 867.
- for milk, etc., (P.), B., 520.
- bowl, (P.), B., 571, 787, 826.
- cleaning apparatus for, (P.), B., 827.
- continuous, (P.), B., 95.
- cyclone, for dust, B., 1.
- dust, (P.), B., 425.
- magnetic and electromagnetic, (P.), B., 766.
- pneumatic, (P.), B., 826.
- rotary spraying, (P.), B., 183.
- tar, (P.), B., 577.
- Serandite, A., 332.
- Sericin, change of properties of, on storage of cocoons, A., 643.
- Serine, synthesis of, and its phenylcarbimide derivative, A., 205.
- alkaline decomposition of, A., 638.
- formation of glycine from, A., 1279.
- iso*Serine, dissociation constant of, A., 1233.
- Serpentine, deposits of, in Togoland, A., 1029.
- Sertularida*, hydroid pigments of, A., 1442.
- Serum, electrolyte partitions in, A., 506.
- distribution of electrolytes between, and *in-vivo* dialysates and transudates, A., 754.
- ionic equilibria in, in relation to critical temperature, A., 973.
- albumin and globulin fractions of, A., 640, 1180.
- anaphylaxis of, A., 1321.
- calcium in, in health and disease, A., 865.
- binding of calcium ions by, A., 759.
- relation of calcium in, to protein and inorganic phosphate, A., 1441.
- distribution of cholesterol and phosphatides in ultrafiltration of, A., 1320.
- effect of anti-coagulants on enzymes of, A., 1441.
- action of anti-coagulants on complement and enzymes of, A., 974.
- proteolytic enzymes in, A., 641, 1080, 1319.
- proteins, A., 1440.
- constitution of, A., 247, 640.
- physical properties of, A., 1079, 1319.
- refractometric investigation of, A., 505, 1176, 1319.
- osmotic pressure of, A., 248.
- dialysis of, A., 640, 1175.
- effect of diathermy on concentration of, A., 122.
- chemical individuality of, A., 503.
- albumin and globulin fractions of, A., 505.
- complex carbohydrates from, A., 110, 1175.
- influence of lecithin on stability of, A., 505.
- effect of thyroid feeding or thyroidectomy on, A., 114.
- changes of, in under-nutrition, A., 646.
- determination of, A., 858.
- interferometrically, A., 1080.
- of sensitised animals, nitrogen distribution in, A., 984.
- effect of, on liver autolysis, A., 984.
- chicken, tumour-inhibiting substance in, A., 1445.
- Serum, guinea-pig and human, effect of, on haemolysis, A., 755.
- horse, amylase of, during bleedings, A., 754.
- refraction of proteins of, A., 505, 1176.
- anti-meningococcic and anti-pneumococcic, concentration of, A., 656.
- human, isoelectric points and alexic power of, A., 860.
- action of amino-acids on isoelectric point of, A., 114.
- non-nephritic, of children, A., 1176.
- determination of alkali reserve in, A., 1176.
- determination of total bases in, A., 1320.
- determination of bilirubin in, A., 110.
- determination of calcium in, A., 859.
- determination of cholesterol in, A., 755.
- determination of p_H of, A., 754.
- determination of mineral constituents of, by ultrafiltration, A., 506.
- determination of phosphorus in, A., 111, 974.
- determination of sulphates in, A., 111.
- determination of water in, A., 504.
- Serum-albumin. See under Albumin.
- Serum-globulin. See under Globulin.
- Sesamé oil, colour reactions of, B., 500.
- detection of, in solid mixed fats, B., 355.
- determination of, in arachis oil, B., 134.
- Sesamum indicum*. See Bennisseed.
- n*- and *iso*-Sesquichamenes, and their derivatives, B., 698.
- Sesquioxides, crystal structure of, A., 415.
- Sesquiterpenes, B., 993.
- stereochemistry of, A., 1302.
- oxidation-reduction of, catalytically, A., 1288.
- Settling apparatus, (P.), B., 703, 869*.
- discharge of sludge from, (P.), B., 703.
- Sewage, treatment of, (P.), B., 1076.
- Imhoff tanks for, at Philadelphia, B., 1124.
- plant for, at New Castle, B., 1124.
- clarifying plant for, (P.), B., 953.
- effect of temperature on settling of solids of, B., 419.
- drying of solids of, B., 700.
- purification of, B., 1123; (P.), B., 1028.
- rôle of protozoa in purification of, by activated sludge, B., 567.
- disposal of, by activated sludge process, B., 566.
- plant for, (P.), B., 744*, 996.
- at Los Angeles, B., 995.
- effect of industrial wastes on operation of plant for, B., 995.
- separation, digestion, and disposal of solids of, B., 995.
- disposal of screenings from, B., 996.
- thermophilic digestion of solids of, B., 418.
- cleaning of trickling filters for, (P.), B., 1156.
- loss of ammonia-nitrogen from trickling filters for, B., 824.
- biochemical oxygen demand of trickling filters for, at Decatur, B., 948.
- removal of grease from, B., 1124.
- examination of, B., 567.
- effect of dilution water on biochemical oxygen demand of, B., 948.
- effect of chloroform on "oxygen consumed" value of, B., 419.
- p_H control in, B., 1156.
- effect of chlorination on bacteria in, B., 1123.
- properties of colloids in, B., 744.
- distribution of iodine in, B., 700.
- destruction of algae and fungi in, (P.), B., 420.
- protection of metal surfaces in contact with, B., 996.
- containing industrial wastes, treatment of, B., 995.
- sanitary, containing milk waste, treatment of, B., 948.
- treated, reclamation of, B., 567.
- determination of carbon in, B., 655.
- determination of organic carbon in, B., 996.
- determination of hydrogen sulphide in, B., 948.
- Sewage effluents, determination of dissolved carbon in, B., 996.
- Sewage sludge, treatment of, (P.), B., 568.
- aeration of, B., 137.
- drying of, B., 700, 1123; (P.), B., 612.
- effect of chemicals on vacuum filtration and gravity drying of, B., 700.
- digestion of, B., 948, 1075, 1123, 1124.
- influence of chlorine on, B., 516.
- influence of seeding material on, B., 567.
- effect of iron on anaerobic decomposition of, B., 794.
- deodorisation of, with moulds, B., 1028.
- ripeness of, B., 1156.
- examination of, B., 567.

- Sewage sludge, fresh and ripe, organic constituents of, B., 700.
ripe, function of, B., 567.
- Sex, differences of, in biochemistry, A., 1448.
conditions of metabolism affecting change of, A., 384.
active preparation which retards development of, (P.), B., 1155.
- Shaking apparatus, A., 457.
- Shale, treatment of, (P.), B., 663.
to increase strength, B., 64.
distillation of, (P.), B., 383.
bituminous, distillation of, (P.), B., 190.
black, of Japanese oil measures, A., 708.
Esthonian, properties of high-temperature gas from, B., 186.
oil, treatment of, B., 52.
retorts for, (P.), B., 663, 1130.
distillation of, (P.), B., 960.
retort for, (P.), B., 236, 1129.
low temperature carbonisation and distillation of, (P.), B., 872.
from Pictou County, Nova Scotia, B., 100.
Swedish, B., 617.
- Shale oil, refining of, with silica gel and bauxite, B., 284.
desulphurisation of, B., 575.
Esthonian, hydrogenation and desulphurisation of, B., 575.
- Sharps, detection of rice hulls and sawdust in, B., 219.
- Sheep, feeding of, on mineral-deficient herbage, B., 83.
digestibility of constituents of nitrogen-free extracts of feeding-stuffs by, B., 1070.
- Sheepskins, imparting lustre to, (P.), B., 855.
- Sheepskin skivers, preparation of, for tests on tanning materials, B., 265.
- Sheets, impregnated, manufacture of, (P.), B., 583.
- Shellac, A., 960; B., 1146.
composition containing, (P.), B., 643, 853*.
determination of "insolubles" in, B., 34.
determination of wax in, B., 33.
- Shellfish rich in iodine, preparation of an iodised marine medium for production of, (P.), B., 415.
- Shellolic acid, separation of, from aleuritic acid, and its salts, A., 960.
- Sherardising, effect of carbon and iron in blue powder on, B., 886.
- Sherbet, addition of honey to, B., 315.
- Shibuol, in kaki, B., 364.
- Shifting, vibrating screens for, (P.), B., 372.
- Shingles, metal-clad, (P.), B., 814.
- Ships, device for measuring velocity of, (P.), B., 49.
- Shobakunine, and its iodide, A., 242.
- Shrimp oil, antirachitic properties of, A., 272.
- Shrimp waste, cholesterol content of, A., 1081.
iodine content of, B., 364.
- Siccatives, production of, in solution, (P.), B., 1018.
mechanism of action of, B., 211.
determination of soluble part of, B., 258.
- Sida cordifolia*, constituents of, A., 274.
- Sieves, suggested "sorting value" for, B., 950.
rotary, for dewatering, (P.), B., 16.
- Sieving apparatus, (P.), B., 49, 570.
- Silage, B., 690.
production of, from sunflowers, B., 1070.
from sweet potato tops, B., 216.
calorific value of, B., 317.
butyric acid bacteria in, B., 645.
butyric fermentation in, B., 608.
clover. See Clover silage.
crop, carbon dioxide production in, A., 1198.
- Silane, ortho-ethers, decomposition of, on heating under pressure, A., 1404.
- Silberkiese, A., 1266.
- Silica. See Silicon dioxide.
- Silica bricks. See under Bricks.
- Silica gel, A., 38, 1123.
structure of, A., 909.
formation of, from alkali silicate solutions, A., 562.
manufacture of, (P.), B., 294.
as catalyst in preparation of nitriles, A., 339.
adsorption by, A., 1121, 1227.
adsorption of ethylene by, A., 419.
adsorption of gases by, A., 419.
adsorption of water by, A., 794.
from mixtures with ethyl alcohol, A., 794.
density of water adsorbed on, A., 305.
- Silica gel, band formation of cobalt sulphide in, A., 909.
reduction reactions in, A., 909.
separation of, in plant cells, A., 133.
effect of, on phosphorus assimilation by nitrogen-fixing organisms, A., 1192.
adsorptive, production of, (P.), B., 200.
- Silicates and Silicic acid. See under Silicon.
- Silicious materials, preparation of, (P.), B., 201.
- Silicochloroform, Raman spectrum of, A., 1353.
- Silicomethane derivatives, hydrogenation and rearrangement of, A., 944.
- Silicon, free, formation of, from silane ethers, A., 1404.
adsorption spectrum of, A., 663.
Zeeman effect in, A., 663.
electrical conductivity of, A., 30.
electric resistance of, A., 674.
parachor of, A., 287.
crystal structure of, A., 1001.
- Silicon alloys with aluminium, A., 556, 1224.
with aluminium and beryllium, A., 901.
with aluminium and copper, B., 494.
with aluminium and iron, A., 158.
with aluminium and magnesium, B., 161.
with copper and iron, manufacture of, (P.), B., 353.
with iron, production of, (P.), B., 120.
- Silicon carbide, uses for, B., 569.
effect of, on clay bodies, B., 248.
tetrafluoride, structure of, A., 151.
physical constants of, A., 553.
hydride, spectrum of, A., 663.
tetraiodide, crystal structure of, A., 897.
dioxide (*silica*), X-ray structure of, A., 888.
production of, (P.), B., 924.
recovery of, (P.), B., 1094.
grinding of, B., 1095.
crystallographic transformations of, in relation to reactivity, A., 582.
adsorption by, of binary non-aqueous systems, A., 1006.
of binary organic liquid mixtures, A., 1006.
of mixed gases, A., 420.
volatility of, in water vapour, A., 582.
phase equilibria of chromic oxide and, A., 41.
equilibrium of, with calcium and potassium oxides, A., 1011.
with lithium oxide, A., 169.
with sodium silicate and ferric oxide, A., 170.
behaviour of, on heating with carbon in chlorine, A., 321.
fusion of, with ferric oxide, A., 1010.
influence of hydrogen on chemical changes in, A., 916.
reaction of sodium carbonate with, A., 800.
manufacture of articles of, (P.), B., 842.
manufacture of sheets of, for windows, (P.), B., 65.
production of heat insulating material from, (P.), B., 632.
fused, working of, (P.), B., 65.
apparatus for, (P.), B., 589.
moulding of articles in, (P.), B., 159.
hydrated, heats of formation of, A., 685.
vitreous, photo-elastic dispersion of, A., 286.
determination of, in glass sand, B., 491.
in vegetable substances, A., 926, 1201.
- Disilicon hexafluoride, A., 1140.
- Silicic acid, and silicates, A., 445.
ageing of solutions of, A., 426.
action of, in soils, B., 506.
colloidal, production of, (P.), B., 157*.
hydrosols, A., 303, 921.
"sugar soluble," behaviour of, in sugar solutions and beet juices, B., 509.
determination of, in water, B., 226.
in mineral water, B., 908.
- Monosilicic acid, A., 1021.
- Silicic acids, lower, A., 696.
- Silicates, structure of, A., 289, 595, 789.
pneumatolytic synthesis of, A., 322, 1381.
production of, by action of steam on sodium chloride-silica mixtures, B., 60.
removal of, from solutions, (P.), B., 804.
determination of heats of formation of, A., 685.
manufacture of porous masses of, (P.), B., 64.
crystalline and vitreous, electrical conductivity of, A., 1012.
mineral, adsorption of ammonia by, A., 1120.

Silicon:—

- Silicates, natural, treatment of, (P.), B., 156.
 - of the Canary Islands, A., 817.
 - conversion of alkali sulphates to chlorides in analysis of, A., 700.
 - determination of water in, A., 325.
 - determination of water and carbon dioxide in, A., 1023.
- Silicon organic compounds, A., 855, 1435.
 - hydrogenation and decomposition of, at high temperature and pressure, A., 944.
 - aromatic, fission of Si-R linkings in, by aluminium chloride, A., 1435.
 - therapeutically valuable, preparation of, (P.), B., 612.
 - Silicic acid, esters, A., 1021.
- Silicon determination:—
 - determination of, in ferrosilicon, B., 591, 976.
 - in iron and steel, B., 24.
- Silicosis, pulmonary, histochemistry of lesions of, A., 1084.
- Silicotungstates, A., 809.
- Silk, optical activity of, B., 624.
 - treatment of, (P.), B., 535.
 - soaking of, B., 345.
 - degumming of, before dyeing, (P.), B., 755.
 - properties of aqueous solutions of, and their fluorescent colours, B., 532.
 - action of diazonium salts on, B., 484.
 - metallised, manufacture of, (P.), B., 347.
 - waste, production of filaments, yarns, threads, etc., from, (P.), B., 714.
 - wild and true, distribution of nitrogen in, A., 1322.
 - determination of, in silk fabrics, B., 670.
 - determination of moisture in, B., 966.
- Silk, artificial, manufacture of, (P.), B., 16, 342, 482, 533, 626, 715, 836, 1044, 1136.
 - apparatus for, (P.), B., 672.
 - from viscose, (P.), B., 481, 715.
 - production of viscose for, (P.), B., 481.
 - from cellulose acetate solutions, (P.), B., 242.
 - production of raw material for, from peat, (P.), B., 109.
 - apparatus for treatment of, with liquids, (P.), B., 880.
 - treatment of cross-wound cheeses of, with liquids, (P.), B., 969.
 - washing of, (P.), B., 109, 1006, 1089, 1136.
 - during manufacture, (P.), B., 437.
 - drying of, (P.), B., 1136, 1137.
 - spinning of, (P.), B., 153, 1044.
 - machinery for, (P.), B., 879, 1090.
 - bowls for, (P.), B., 291.
 - feeding means for spinning apparatus for, (P.), B., 838.
 - devices for treatment of masses of spun filaments of, (P.), B., 878.
 - spinning of threads of, (P.), B., 968.
 - spinning funnels for, (P.), B., 437.
 - dry-spinning of, (P.), B., 582.
 - device for stretch-spinning of, (P.), B., 878.
 - treatment of yarns of, after spinning, (P.), B., 482.
 - washing of spinning bobbins for, (P.), B., 838.
 - washing and treatment of spinning cakes of, (P.), B., 17, 533, 754.
 - delustring of, (P.), B., 346, 1046.
 - softening of, (P.), B., 244.
 - physical properties of, B., 196.
 - solubility of, in sodium hydroxide solution, A., 107.
 - determination of uniformity of, B., 291.
 - production of hollow fibres of, B., 835.
 - flow and relaxation of filaments of, B., 624.
 - manufacture of filaments, etc. from, (P.), B., 481, 486, 533, 754.
 - production of luminous filaments of, (P.), B., 921.
 - coiling of threads of, (P.), B., 1137.
 - twisting of threads of, (P.), B., 389.
 - wet-stretching of threads of, (P.), B., 673.
 - manufacture of threads, etc. of, from cellulose derivatives, (P.), B., 388.
 - precipitating baths for, (P.), B., 342.
 - cellulose acetate, production of, (P.), B., 153, 1043.
 - sizing of, (P.), B., 486.
 - testing the resistance of, to boiling, B., 390.
 - partial hydrolysis of, B., 1007.
 - production of coloured materials containing, (P.), B., 292.
 - dull-lustre, (P.), B., 391.
- ouprammonium, manufacture of, by the stretch-spinning process, (P.), B., 108, 388.
- spinning of, (P.), B., 1044.

- Silk, artificial, curled or crimped, manufacture of, (P.), B., 799.
- dull, production of, (P.), B., 243.
- manufacture of filaments of, (P.), B., 244.
- of reduced lustre, manufacture of, (P.), B., 534, 968.
- elastic, manufacture of, (P.), B., 343.
- hollow, manufacture of, (P.), B., 1044.
- matt, manufacture of, (P.), B., 836.
- rayon, conditioning of cellulosic fibre for manufacture of, (P.), B., 109.
- treatment of, (P.), B., 755, 1137.
- effect of spinning on physical properties of, B., 437.
- testing of yarns of, B., 1042.
- spun, handling cakes of, (P.), B., 345.
- translucent, (P.), B., 388.
- viscose, (P.), B., 109.
- manufacture of, B., 341.
- corrosion of vessels in, B., 116.
- spinning of, (P.), B., 197*.
- effect of, on cross-section, B., 1088.
- finishing of, spun on bobbins, (P.), B., 923.
- elimination of gases from cakes of, (P.), B., 153.
- effect of swelling agents on creasing properties of, B., 671.
- desulphurisation of, (P.), B., 17.
- detection of strain in, B., 437.
- production of filaments of, (P.), B., 799.
- manufacture of threads, etc. from, (P.), B., 109, 388.
- production of yarns of diminished lustre from, (P.), B., 836.
- dull-lustre, manufacture of, (P.), B., 485.
- Nuera, B., 107.
- of high tensile strength, production of, B., 581.
- chemical analysis of, B., 581.
- Silk fabrics, determination of silk in, B., 670.
- artificial cellulose ester or ether, delustring of, (P.), B., 17.
- Silk fibroin, A., 415.
- action of, with stannic chloride and sodium hydrogen phosphate, A., 1173.
- basic amino-acids of, A., 1317.
- manufacture of solutions of, (P.), B., 967.
- spinning of acid solutions of, (P.), B., 715.
- manufacture of threads, etc. from, (P.), B., 153.
- Silkworms, kaijo of cocoons of, A., 1322.
- constituents of pupae of, A., 1322.
- effect of respiratory injury on biophysical properties of fluids of larvae of, A., 1322.
- solubility of acid lead arsenate in alimentary tract of, A., 652.
- "Silumin," resistance of, to corrosion, B., 722.
- Silver, atomic weight of, A., 407.
- occurrence of, in the Kongsberg mining fields, A., 331.
- production of, from bituminous shale ores, (P.), B., 353.
- spectra of, A., 1205, 1344, 1346.
- electrodeposition of, B., 845.
- from sulphate, nitrate, fluoborate, and fluoride solutions, B., 930.
- electroplating with, (P.), B., 303.
- solutions for, B., 930.
- use of cyanides in baths for, B., 979.
- separation of, from crude antimony and its ores, (P.), B., 813.
- refining of, electrolytically, B., 496.
- crystal orientation produced by cold-rolling of, A., 1115.
- spectra of, A., 276, 993.
- arc spectrum of, A., 136.
- effect of strain on magnetic susceptibility of, A., 551.
- X-ray absorption by, A., 1105.
- null point of charge of, A., 914.
- temperature coefficient of electrode potential of, A., 801.
- photo-electric properties of, A., 889.
- crystals, deformation of, A., 791.
- equilibrium of, with copper and oxygen, A., 1235.
- solubility of copper in, A., 794.
- effect of moisture on the reaction of sulphur with, A., 692.
- films, specific resistance of, A., 792.
- thin, light absorption and structure of, A., 560.
- production of solutions of, for silvering, (P.), B., 112.
- use of, in chemical plant, B., 299.
- bivalent, paramagnetism of, A., 895.
- colloidal, properties and assay of, B., 863.
- action of gum arabic on, A., 561.
- effect of injection of, on sugar in blood, A., 127, 128.
- sols, preparation of, A., 423, 424, 1123.
- effect of light on, A., 48, 165.

- Silver**, electrolytic, efflorescences on coatings of, B., 446.
 free, in photographic emulsions, B., 223.
 sheet, crystal orientation in, A., 1358.
 tarnish-resisting, production of, B., 303; (P.), B., 548.
 indicators for use in determinations with compounds of, A., 56.
- Silver alloys** for contact points, (P.), B., 303.
 tarnish- and age-resistant, B., 445.
 ternary, A., 556.
 with aluminium, A., 556, 1005.
 with antimony, arsenic and bismuth, A., 1223.
 with cadmium, A., 556.
 electrodeposition of, B., 496.
 crystal structure of, A., 901.
 effect of tarnishing on reflecting power of, B., 930.
 with copper, A., 556.
 composition and properties of, A., 296.
 spectroscopic analysis of, A., 702.
 with copper and manganese, A., 1364.
 with copper and nickel, (P.), B., 208.
 with gold, action of nitric and sulphuric acids on, A., 1253.
 potential of, A., 1137.
 with lithium, A., 418.
 containing manganese, (P.), B., 639.
 with mercury, A., 1224.
 with tin, A., 1223.
 with zinc, solution of, in acids, A., 1133.
- Silver compounds**, effect of irradiation on action of, in the organism, A., 1330.
 bi- and tri-valent, A., 1380.
- Silver salts**, molecular volumes of, A., 24.
 dispersoidology of, in alcohol and acetone solutions, A., 561.
 solubilities of, A., 297.
 solid, relation between thermo-electric power, thermolysis, and ionic mobility in, A., 312.
 compounds of hexamethylenetetramine with, A., 1019.
 influence of ultra-violet light on behaviour of, in the organism, A., 652.
 staining of nervous tissues with, A., 755.
- Silver bromide**, forms of, A., 579.
 action of light on, A., 1137.
 photonegative effect on conductivity of, A., 579.
 thermodynamics of molten solutions of lithium bromide in, A., 309.
 thermodynamics of fused solutions of potassium bromide and, A., 1234.
 and iodide, band spectra of, A., 1211.
 carbonate, equilibrium of formation and decomposition of, A., 437.
 chloride, photolysis of, A., 920.
 reduction of, A., 1379.
 chloride and bromide, refractive indices of crystals of, A., 286.
 chromate, condition of, in dialysed and hydrolysed gelatin, A., 687, 1125.
 ferrites, A., 695, 1253.
 subfluoride, thermal decomposition of, A., 581.
 halides, lattice energies and photochemical decomposition of, A., 180.
 photographic reversal and sensitivity of grains of, A., 319.
 reciprocal decomposition of, with potassium halides, A., 800.
 reduction of, by sodium nitrite and sulphite, A., 917.
 hydride, band spectrum of, A., 137, 1344.
 solid, A., 1019.
 iodate, heat capacity and entropy of, A., 1362.
 iodide, modifications of, A., 444.
 fluorescence dissociation of vapour of, A., 409.
 equilibrium of, with lead iodide, A., 1010.
 colloidal, manufacture of, (P.), B., 824.
 potentiometric precipitation titration of, A., 186.
 permanganate, crystal structure of, A., 414.
 absorption of hydrogen by, A., 1256.
 mercuri-iodide, crystal structure of, A., 1359.
 nitrate, hydrolysis of mixtures of gelatin and, during washing, A., 428.
 and sulphate, ammoniates of, A., 698.
 oxide, solubility of, in water, A., 1119.
 phosphides, A., 1128.
 selenite, determination of, in presence of silver selenide, A., 813.
 sulphate, double decomposition of thallous chloride and, A., 568.
 sulphide, conductivity of, A., 1213.
 thiosulphates, complex, A., 1252.
 sodium thiosulphates, A., 443, 695.
- Silver organic compounds**, complex, A., 234.
- Silver detection and determination** :—
 detection of, A., 327.
 toxicologically, A., 588.
 with dimethylaminobenzylidenerhodanine, A., 590.
 in minerals, A., 701.
 determination of, volumetrically, A., 452.
 with iodine, A., 1023.
 in gold bars, B., 1056.
 in oligodynamic water, micro-chemically, A., 186.
 in photographic gels, B., 223.
 in steel, B., 543.
- Silver articles**, annealing of, (P.), B., 1103.
- Silver coins**. See under Coins.
- Silver ions**, migration of, in gelatin layers, A., 427.
 adsorption of, by tungstic acid sols, A., 797.
- Silver ores**, chlorination roasting of, B., 351.
 cyanidation of, B., 979, 1142.
 containing lead, treatment of, B., 254.
 oxidised, concentration of, (P.), B., 164.
 experimental flotation of, B., 722.
- Silver wire**, effect of torsion on length of, B., 763.
- Sinactine**, synthesis of, A., 1312.
- Sinalbin**, A., 73.
- Sinapis dissecta***, seeds and oil of, B., 595.
- Sinigin**, A., 73.
- Sinistrin**, animal, A., 642.
 detection of, B., 653.
- Sinomenine**, A., 105, 501, 635, 970, 1171, 1172, 1314.
 action of formaldehyde on, A., 105.
 decomposition of, with methyl sulphate, and its methyl metho-
 sulphate, A., 970.
- Sinomeninemethines**, and their derivatives, A., 635.
- Sinomeninenonesulphonic acid**, and its dioxime, A., 105.
- Sinomeninesulphonic acid**, A., 105.
- Sinomenium***, alkaloids from, A., 243.
- Sinomeninonefurazan**, A., 1172.
- Sintering apparatus**, (P.), B., 517, 951, 1078.
- Sintering machines**, (P.), B., 447.
- Sitosterol**, composition of, A., 1289.
 relationship of saturated derivatives of ergosterol and, A., 219.
- Size**, manufacture of, from starch, (P.), B., 737.
 for textiles, hydrolysis of starch by oxalic acid in preparation of, B., 901.
 rosin, manufacture of, B., 126.
 for paper, sensitivity of, to light, B., 768.
- Sizing**, B., 1005.
- Skating**, composition for surfaces for, (P.), B., 718.
- Skeleton**, analysis of, A., 1321.
 of invertebrates, calcium in, A., 1177.
- Skin**, constituents of, with a thiol function, A., 642.
 effect of ultra-violet irradiation of, on gastric secretion, A., 643.
 correlation of potential differences in, with basal metabolism, A., 384.
 diastatic enzymes in, A., 1447.
 action of tincture of iodine and mustard oil on gaseous metabolism and circulation of, A., 518.
 absorption of organic substances by, A., 1452.
 sugar content of, A., 758.
 human, permeability of, to ultra-violet rays, A., 519.
- Skins**, microscopic examination of, B., 645.
 preparation of, for vegetable tanning, (P.), B., 600.
 ammonia in lime liquors from treatment of, B., 408.
 enzyme lime liquors for, B., 732.
 bating of, (P.), B., 645.
 analyses of salts used in curing of, B., 771.
 action of pickling solutions on, B., 358, 1148.
 machines for steeping of, (P.), B., 506.
 unhairing of, (P.), B., 772, 1021.
 effect of follicular mange on, B., 937.
 animal, hydration of, B., 731.
 liming and depilation of, B., 938.
 biochemistry of soaking and liming of, B., 129.
 removal of lime from, B., 1021.
 enumeration of bacteria in soak waters for, B., 310.
 dehaired, effect of lyotropic salts and tanning material on, B., 173.
 raw, effect of cold on, B., 554.
 scrap, treatment of, B., 359.
- Sky**, ultra-violet spectrum of, A., 1346.
 night, spectrum of, A., 1, 1209.

- Slag, grinding of, (P.), B., 398.
 effect of, on refractory bricks, B., 720.
 treatment of, for production of bricks, etc., (P.), B., 493.
 from steel furnaces, reduction of, (P.), B., 207.
 basic, fine structure of, after preheating and its relation to citric acid solubility, B., 885.
 composition and action of, B., 604.
 open-hearth, composition of, B., 250.
 blast furnace, cause of "iron disintegration" of, B., 591.
 utilisation of, B., 635; (P.), B., 679.
 production of cellular light material from, (P.), B., 810.
 liquid, granulation of, B., 250.
 iron smelter, corrosive action and constitution of, B., 491.
 liquid, granulation of, (P.), B., 889.
 titaniferous, titanium in, B., 721.
 determination of lead in, B., 888.
 determination of zinc in, B., 491.
- Slate, colouring of granules of, (P.), B., 590.
 production of greyish-black granules of, (P.), B., 761.
 manufacture of slabs of, (P.), B., 926.
 granulated, colouring of, (P.), B., 203.
 X-ray analysis of, A., 1146.
- Sludge, drying or concentration of, (P.), B., 825.
 separator for, (P.), B., 50*.
 acid, hydrolysis of, (P.), B., 104, 384.
 activated, correlation between oxygen demand and solids, B., 784.
 influence of sulphur on ammonification and nitrification in, B., 457.
 oil-cracking aluminium chloride, regeneration of, (P.), B., 384.
 See also Sewage sludge.
- Smallpox, determination of size of vaccine virus of, A., 1095.
- Smelting, influence of flotation on, B., 1142.
- Smoke, composition for generating, (P.), B., 431.
 purification of, (P.), B., 281.
 measurement of opacity of, B., 745.
 particles, ultramicroscopy of, in liquid films, A., 1008.
 screening, relation between obscuring power, particle size, and number of, A., 796.
- Snails, modified calcium carbonate in shells of, A., 596.
- Snakeroot, white. See *Eupatorium urticæfolium*.
- Snake venom. See under Poisons.
- Snow, spring balance for measuring the water content of, A., 593.
- Soaking pits, recuperative, (P.), B., 517.
- Soap or Soaps, X-ray structure of, A., 1008, 1367.
 manufacture of, (P.), B., 71, 727, 817, 1061.
 apparatus for, (P.), B., 32.
 separation of, from mixtures with oils or fats, (P.), B., 402.
 boiling of, B., 982.
 spray-drying of, (P.), B., 596.
 preservation of, (P.), B., 854, 935.
 stabilisation of, (P.), B., 874.
 bleaching of, (P.), B., 850.
 relation between properties of, and unsaturation of fatty acids, B., 400.
 solubility of, in water, B., 400.
 absorption and desorption of water from, B., 893.
 gels, cooling curves of, A., 1231.
 spontaneous coloration of lyes from, B., 258.
 effect of p_H on detergent action of, B., 816.
 use of fish oils in, B., 816.
 migration of sodium chloride in cakes of, B., 550.
 properties of complex compounds of heavy metals with, A., 870.
 for laundering, etc., manufacture of, (P.), B., 728.
 and soap mixtures, germicidal effect of, B., 225.
 germicidal assay of, B., 727.
 acid or alkaline, B., 641.
 castor oil, manufacture of, (P.), B., 259.
 curd, distribution of glycerin in lye and, B., 850.
 dry-cleaning, solubility of, B., 1018.
 hard-water, manufacture of, (P.), B., 622.
 manganese, B., 211, 550.
 metallic, effect of, in paints, B., 32.
 naphthenic acid, B., 1035.
 paste, for paint, etc., (P.), B., 684.
 petroleum, preparation of, in Grozni refineries, B., 1035.
 powdered, manufacture of, from soap stock of high fatty acid content, (P.), B., 817.
 rosin, recovery of, from spent wood liquors, (P.), B., 596.
 sea-salt, (P.), B., 71.
- Soap or Soaps, shaving, manufacture of, (P.), B., 894.
 shredded, manufacture of, (P.), B., 212*.
 sodium, separation of, A., 1119.
 soft, manufacture of, (P.); B., 684.
 textile, B., 1060.
 toilet, raw materials for, B., 500.
 unsaponifiable matter and isocoleic acids in, B., 550.
 milled white, B., 123.
 washing, (P.), B., 501.
 analysis of, B., 816.
 determination of free fat in, B., 727.
 determination of fatty acids in, B., 30, 400.
 determination of naphthasulphonic acid soaps in mixtures of mineral oils and, B., 727.
 determination of unsaponified oil in, B., 306.
 determination of water in, B., 124.
- Soap-nuts, saponin of, A., 1159.
- Soap solutions, surface tension of, A., 679, 1228, 1229, 1366.
 surface tension and thickness of adsorbed films of, A., 162.
 structure of films from, A., 299.
 insecticidal action and physical properties of, B., 268.
 alkaline, surface tension of, B., 124.
 isotonic, for injection, A., 260.
 determination of alkalinity of, A., 686.
- Soda. See Sodium carbonate.
 caustic. See Sodium hydroxide.
- Sodalite, structure of, A., 289.
- Soda-pulp, recovery of acetate from black liquors from manufacture of, B., 671.
 treatment of black liquor from, (P.), B., 583.
- Sodium, production of, (P.), B., 354.
 by electrolysis, (P.), B., 303.
 isotopes of, A., 1207.
 spectrum of, A., 283.
 D-lines in, A., 404.
 absorption spectrum of, A., 1103, 1344.
 emission spectrum of, A., 1103.
 spark spectrum of, A., 992.
 flames, absorption of light by, A., 1210.
 solid, chemiluminescence of, A., 1212, 1354.
 extinction of light from, by iodine atoms and molecules, A., 890.
 transport numbers of, in its amalgams, A., 569.
 low-voltage excitation of, A., 1203.
 solution tension of, in non-aqueous solvents, A., 801.
 osmotic coefficient of, in sodium hæmoglobinate, A., 753.
 velocity of reaction of, with halogen hydrides, A., 314.
 reaction of, with elements, in liquid ammonia, A., 695.
 with oxygen, A., 1252.
 with sulphur organic compounds, in liquid ammonia, A., 334.
 condensation with, A., 1050, 1058.
- Sodium alloys with calcium, equilibrium of, A., 900.
 with mercury, electrolysis of, A., 569.
- Sodium compounds, production of, (P.), B., 924.
- Sodium salts, production of, from sylvinite, (P.), B., 757.
 effect of intracerebral injection of, A., 386.
- Sodium aluminate, electrical conductivity of aqueous solutions of, A., 568.
 peraluminate, A., 50.
 arsenate, electrochemical preparation of, A., 577.
 arsenite, velocity of reaction of, with sodium tellurate, A., 1241.
 azide, decomposition of, A., 920.
 borate (*borax*), recovery of, from brine, (P.), B., 200.
 treatment of ores containing, (P.), B., 803.
 crystallisation of, from solution, (P.), B., 971.
 from Searles Lake brine, (P.), B., 803.
 borates, fused, viscosity of, A., 676.
 bromide, thermodynamic properties of fused solutions of, in silver bromide, A., 800.
 carbonate (*soda*), manufacture of, (P.), B., 349, 631, 840, 924, 1048.
 and recovery of potassium sulphate from mother liquors therefrom, (P.), B., 840.
 recovery of, in paper mills, B., 582.
 rotary furnaces for recovery plants for, (P.), B., 321.
 production of solutions of, (P.), B., 882.
 crystalline, manufacture of, (P.), B., 61.
 chemical control of, B., 970.
 decomposition of, by heat, A., 800.
 causticisation of, B., 629.
 by ferric oxide, B., 717.

- Sodium carbonate**, reaction of silica with, A., 800.
 effect of, on gasification of carbon, B., 466.
 Californian desert, B., 629.
 determination of, in bicarbonate, B., 244.
 carbonate, hydroxide, and phosphate, germicidal efficiency of, A., 657.
 hydrogen carbonate, production of, (P.), B., 176, 606, 718, 882.
 dialysis of solutions of, A., 162.
 equilibria of sodium sulphate, water, and, A., 432.
 determination of, in milk, B., 651.
 chlorate, as weed-killer, B., 1067.
 toxicity of, to animals, B., 269.
 chloride (*common salt*), manufacture of, (P.), B., 200, 1091, 1092.
 increasing purity of, B., 438.
 electrical conductivity of solutions of, A., 568, 1129.
 conductivity of fused mixtures of aluminium chloride and, A., 555.
 electrolysis of solutions of, A., 1013.
 drying of, B., 245.
 osmotic coefficient of, in hæmoglobin solution, A., 753.
 energy diagram of, A., 670.
 effect of pressure on solubility of, in water, A., 793, 1370.
 solubility of, in acetic acid, A., 1365.
 strength of wet crystals of, A., 552.
 growth of polished crystals of, A., 1115.
 equilibrium of, with magnesium sulphate, A., 311.
 with magnesium sulphate, potassium sulphate, and water, A., 1011.
 action of solutions of, on magnesium, A., 318.
 action of, on water vapour at high temperature, A., 311.
 dihydrate, melting-point curve of, A., 40.
 effect of solutions of, on corrosion of metals, B., 637.
 migration of, in soap cakes, B., 550.
 in tissues, effect of diuresis on, A., 869.
 determination of iodide in, B., 391, 1048.
 chloride, hydroxide, and nitrate, heat content values for aqueous solutions of, A., 912.
 chloride, fluoride, and sulphate, equilibria of water and, A., 41.
 chloride, nitrate, and nitrite, equilibria of, in ternary systems with potassium salts, A., 912.
 chloroplatinate, reduction of, to platinum by ethyl alcohol, A., 803.
 dichromate, equilibrium of, with ammonium chloride and water, A., 912.
 dichromate and sulphate, equilibrium of water and, A., 911.
 cobaltinitrite, photochemical decomposition of, A., 579.
 fluoride, ultra-violet transparency of, A., 891.
 scattering of X-rays by, A., 138.
 hypocalcæmia from injection of, A., 382.
 fluosilicate, solubility and activity coefficients of, A., 1005.
 hydride, emission spectrum of, A., 1203.
 catalytic hydrogenation with, A., 1135.
 hydrosulphide, formation of, A., 1139.
 hydroxide (*caustic soda*), manufacture of, (P.), B., 488, 630.
 recovery of, B., 1008.
 vapour pressure of aqueous solutions of, A., 566.
 purification of, B., 244.
 evaporation of, using diphenyl vapour, B., 198.
 protection of solutions of, with liquid paraffin, A., 185.
 volumetric determination of carbonate in, by Winkler's and Warder's methods, B., 839.
 hypochlorite, catalytic decomposition of, A., 576, 1241.
 deterioration of solutions of, B., 839.
 hyponitrite, A., 1140.
 hypophosphite, action of, on solutions of nickel salts, A., 1019.
 on solutions of cobalt salts, A., 1374.
 hyposulphite, manufacture of, (P.), B., 718.
 action of nitric oxide on, A., 922.
 iodate, action of hypophosphorous acid on, A., 1373.
 iodate and nitrate, equilibrium of water and, A., 568, 800.
 iodide, products of optical dissociation of, A., 48.
 double decomposition of potassium chloride and, A., 41.
 nitrate (*Chili saltpetre*), production of, (P.), B., 757, 803, 924.
 electrical conductivity and polarisation in crystals of, A., 286.
 crystal structure of, A., 1359.
 transition in, A., 1115.
 effect of liquid ammonia on, A., 1021.
 conversion of, to potassium nitrate, B., 60.
 commercial, influence of impurities on hygroscopy of, B., 60.
- Sodium nitrate**, crystalline, transition of, A., 549.
 Raman effect in, A., 1111.
 nitrate and sulphate, equilibrium of magnesium salts and water with, A., 41, 1128, 1370.
 nitrite, pure, preparation of, A., 921.
 crystal structure of, A., 1218.
 oxidation of, by air, A., 175.
 toxicity of, A., 387.
 effect of, on tissue respiration, A., 1182.
 oxide, preparation of, A., 806.
 polyplumbides and polystannides, A., 695.
 phosphate, manufacture and uses of, B., 629.
 purification of, A., 170.
 dihydrogen phosphate, solubility of, in water, A., 557.
 phosphomolybdate and phosphotungstate, A., 1382.
 phosphotungstate, recovery of, from its solutions, (P.), B., 631.
 silicate, equilibrium of, with ferric oxide and silica, A., 170.
 effect of, on properties of clays, B., 490.
 use of, in enamels, B., 841.
 detection of, in laundry materials, B., 675.
 metasilicate, detergent value of, B., 970.
 as industrial alkali, B., 245.
 silicates, velocity of hydrolysis of, A., 802.
 crystalline and vitreous, electrical conductivity of, A., 1012.
 stannate, precipitation of, (P.), B., 757.
 sulphate, production of, (P.), B., 1092.
 properties of, and its recovery from viscose spinning baths, B., 387.
 separation of, from zinc sulphate, (P.), B., 247*.
 specific heat of solutions of, A., 423.
 fictive volume of, in sulphuric acid solution, A., 560.
 decahydrate, stabilisation of, A., 310.
 dehydration of, B., 348.
 oxidation of, A., 1372.
 anhydrous, crystal structure of, A., 671.
 from Gulf of Karabugaz, utilisation of, B., 629.
 sulphate and thiosulphate, melting points of, A., 1127.
 sulphide, anhydrous, manufacture of, (P.), B., 19.
 crystalline, colourless, preparation of, B., 970.
 determination of hydroxyl and sulphhydrate ions in solutions of, A., 812.
 hydrogen sulphide, manufacture of, (P.), B., 439.
 sulphite, production of, from waste gases from contact sulphuric acid manufacture, B., 347.
 recovery of, from sulphite liquors, (P.), B., 200.
 oxidation of, by air, A., 175.
 by oxygen, A., 1016.
 inhibition of, A., 438.
 as inductor in oxidation, A., 803.
 anhydrous, crystal lattice of, A., 896.
 hydrogen sulphite (*bisulphite*), effect of, on polarising power of sugars, B., 132.
 action of *p*-nitrobenzeneazo- β -naphthol on, A., 951.
 tellurate, velocity of reaction of, with sodium arsenite, A., 1241.
 trithiocarbonate, oxidation of, in alkaline solution, A., 183.
 thiosulphate, as standard in thermochemistry, A., 799.
 action of, on potassium iodate solution, A., 180.
 effect of, on mercury poisoning, A., 982.
 detection of, in kinematograph films, B., 180.
 cuprous thiosulphate, A., 49.
 cuprothiosulphates, complex, A., 807.
 silver thiosulphates, A., 443, 695.
 tungstate, paramagnetism of ions of, A., 291.
 fused, conductivity of, A., 914.
- Sodium organic compounds** :—
 Sodium cyanoplatinite, crystal structure of, A., 415.
 diethyl phosphite, derivative of, with bromine, A., 1268.
 diphenylmethyl, action of mercuric chloride on, A., 502.
 methyl sulphite, A., 463.
- Sodium detection and determination** :—
 detection of, with nickel uranyl acetate, A., 587.
 with Streng-Kolthoff reagent, A., 812.
 microchemically, with uranyl acetate, A., 926.
 determination of, colorimetrically, A., 926.
 volumetrically, A., 186, 1259.
 in presence of aluminium and chromium, A., 56.
 in biological material, A., 1342.
 in blood-serum, A., 641.
 with potassium, as benzidine sulphate, A., 926.

Sodium detection and determination:—

- determination of, in presence of magnesium and potassium, A., 1009, 1258, 1264.
- in organic compounds, A., 1438.
- in raisin wine and must, B., 563.
- as sulphate, A., 1024.
- Sodium coulometers.** See under **Coulometers.**
- Sodium ions, mobility of, A., 1012.**
- in nitrogen and hydrogen, A., 1107.
- Sodium lamp.** See under **Lamps.**
- Soils, structure of, B., 453, 688.**
 - classification of, B., 601.
 - examination of, B., 36.
 - formation of, in Hawaiian Islands, B., 601.
 - composition and weathering of, B., 602.
 - inter-relationships of single-valued properties of, B., 689.
 - effect of drying and of ultra-violet light on, B., 1066.
 - electrical properties of, A., 708.
 - electrical conductivity of suspensions of, as measure of fertility, B., 311.
 - electrofiltration of, B., 173.
 - heat of wetting of, B., 454.
 - determination of volume-weight of, B., 772.
 - determination of total surface area of, B., 37, 898.
 - adsorption capacity of, B., 601, 773, 1110.
 - effect of drying on, B., 453.
 - causes of changes in adsorptive capacity and dispersion of, B., 987.
 - determination of adsorptive capacity of mineral and organic constituents of, B., 773.
 - role of peat in absorptive capacity and buffer action of, B., 939.
 - effect of salt content on water absorption of, B., 898.
 - dispersion of, by a supersonic method, B., 898.
 - application of flow-plasticity conception, B., 601.
 - Atterberg consistency constants of, B., 266.
 - coagulation of aqueous suspensions of, with barium and calcium sulphides, B., 939.
 - moisture in, B., 80.
 - effect of alternation of layers of different texture on, B., 646.
 - "sticky point" water of, B., 37, 311, 646.
 - replaceable bases and water sorption of, B., 81.
 - influence of calcium sulphide on percolation of water through, B., 939.
 - field percolation rates of, B., 555, 1066.
 - mobility of water in, B., 1066.
 - catalytic power of, B., 773.
 - chemistry of, B., 266.
 - permanent records of colour of, B., 311.
 - action of frost on, B., 454, 646.
 - secular and seasonal changes in, B., 897.
 - improvement of, B., 601.
 - microbiology and physical condition of, A., 877.
 - solubility of bases in, in relation to lime condition and saturation, B., 455, 689.
 - nutrient content of, B., 557, 689, 987.
 - influence of plants on water and nutrients of, B., 175.
 - effect of drying of, on solubility of plant nutrients, B., 733, 898.
 - influence of antiseptics on supply of nutrients in, B., 604.
 - effect of nutrient content of seeds on determination of nutrients in, B., 733.
 - diagnosis of nutrient deficiency of, from plant symptoms, B., 1113.
 - use of fertilisers on, B., 690.
 - distribution of fertilisers in, by cultivation, B., 455.
 - effect of fertilisers on suction force of, B., 899.
 - effect of phosphate fertilisers on, B., 81, 82.
 - manurial experiments on, B., 988.
 - effect of artificial farm manures on, B., 267.
 - microbiology of decomposition of farmyard manures in, B., 312.
 - decomposition of green manures in, B., 360.
 - effect of green manures on nitrogen and nutrient contents of, B., 940.
 - action of stall manures in, B., 82, 774.
 - effect of straw manures on, B., 558.
 - effect of manuring and cropping on dispersion of, B., 214.
 - effect of C : N ratio in manures on nitrogen cycle in, B., 456.
 - reaction of, B., 855.
 - effect of fertilisers on, B., 174.
 - influence of nitrogenous fertilisers on, B., 940.
 - instrument for testing, (P.), B., 313.

Soils, acidity of, B., 214.

- in relation to electrolyte content of suspensions, B., 454, 601.
- and lime requirement, B., 82, 455, 773, 1111.
- and plant growth, B., 602.
- and silica : sesquioxide ratio, B., 556.
- acidifying effect of ammonium sulphate on, B., 689.
- acidifying effect of superphosphate on, B., 689.
- fixation of ammonia in, B., 555, 732.
- base-exchange materials of, B., 37, 359.
- rich in organic matter, base exchange in, B., 602.
- calcium in, B., 214, 690.
- effect of calcium arsenate on fertility of, B., 733.
- effect of frost on elimination of carbon dioxide from, B., 506.
- colloids in, B., 36, 79, 173, 214, 359, 556, 601.
- coagulation of, B., 1065.
- colloidal clays in, B., 454.
- origin and composition of humus in, B., 361.
- formation and decomposition of humus in, B., 509.
- bacterial decomposition of humus in, B., 1149.
- colloidal nature of humus of, B., 214.
- isoelectric behaviour of humus complex in, B., 1065.
- humus and nitrogen of, B., 506.
- pH of, B., 556, 646.
- relation between, and lime requirements, B., 132.
- and saturation, B., 80, 602.
- effect of dilution on, treated with various cations, B., 855.
- in water and potassium chloride solutions and effect of magnesium thereon, B., 940.
- pH and phosphorus in expressed liquors from, A., 1201.
- pH "span" as function of buffer power of, B., 939.
- buffer value of, B., 897, 1065, 1110.
- distribution of iodine in climatic types of, B., 132.
- effect of lime on texture of, B., 506.
- lime requirements of, B., 455.
- and buffer values, B., 556.
- effect of lime and magnesia on, B., 82, 173, 603.
- effect of dressings of limestone on, B., 647.
- effect of magnesium compounds on, B., 267.
- assimilation of nitrates in, B., 360, 559.
- relation of nitrates in, to effect of potash on plants, B., 82.
- nitrification in, B., 602, 690.
- nitrites in, B., 1065.
- ammonification of nitrogen compounds in, by pure cultures of micro-organisms, B., 775.
- nitrogen and organic matter in, B., 267.
- organic matter in, and its effect on base exchange, B., 773, 897, 898, 1110.
- in relation to carbon : nitrogen ratio, B., 645, 773.
- effect of hydrogen peroxide on, B., 646.
- decomposition of, and its relation to manuring, B., 1067.
- retention of phosphoric acid by, B., 987.
- effect of, on physical properties, B., 174, 856.
- relation between, and temperature, B., 601.
- phosphate requirement of, B., 455, 690.
- solubility of phosphates in, B., 266.
- distribution of assimilable phosphates in, B., 987.
- transformation of water-soluble phosphates in, B., 987.
- exhaustion of phosphates in, B., 1067.
- phosphates and nitrates in, in relation to plant growth, B., 774.
- phosphoric acid in, B., 215, 1111.
- effect of gypsum on availability of, B., 507.
- fixation of, by titanium dioxide, B., 856.
- mobility of, B., 557, 856, 1066.
- transformations and determination of, B., 856.
- plant-soluble phosphoric acid in, in relation to their geological structure, B., 898.
- phosphorus in, B., 689.
- solubility of potash in, B., 360.
- effect of superphosphate on, B., 507.
- effect of phosphoric acid on root-solubility of potash in, B., 360.
- assimilable potassium in, B., 690.
- action of silicic acid in, B., 37, 506.
- action of basic slag in, B., 455.
- sulphur in, B., 1065.
- decomposition of urea in, A., 769 ; B., 82, 987.
- uronic acids in, B., 409.
- treatment of, with copper pyrites, B., 266.
- podsol formation in, B., 897, 1149.
- lysimeter investigations on, B., 267.

- Soils**, water extracts as indices of salt treatment of, B., 939.
 elutriation, water capacity, and compression tests on, B., 688.
 erosion by, A., 596.
 corrosion of iron pipes by, B., 887.
 corrosion of metals by, B., 1100.
 pipe line currents and resistivity of, as indicators of local corrosive soil areas, B., 855.
 relation between development of *Azotobacter* and buffer power of, B., 601.
 effect of nitrogenous fertilisers on *Azotobacter chroococcum* in, B., 690.
 transformation of *Azotobacter*-nitrogen in, B., 773.
Azotobacter in, B., 857.
 bacteria in, under influence of inorganic iodine compounds, B., 361.
 influence of non-nitrogenous compounds on, B., 557, 1110.
 effect of liming and manuring on, B., 457.
 formation of nitrites by, A., 986.
 nitrogen-fixing, B., 82, 559, 645.
 fungus flora of, B., 556.
 micro-organisms of, and decomposition of lignified materials, B., 80.
 decomposition of oat straw by, B., 312.
 phosphorus assimilation by, B., 773.
 deficiencies of, in ash constituents of plants, B., 1111.
 decomposition of plant residues in, B., 457.
 exchangeable cations of plants and, B., 856.
 sampling of, B., 360.
 sampler for, B., 174.
 sampling tubes for, B., 855.
 preparation of samples of, for pipette analysis, B., 174.
 preparation of profile samples of, B., 453.
- Soils**, acid, factors affecting plant growth on, B., 558.
 manuring of, B., 605.
 comparison of effects of blast-furnace slag and limestone on, B., 266.
 calcium cyanamide manuring on, B., 458.
 action of nitrogenous fertilisers on, B., 38.
 mineral, influence of superphosphate on properties of, B., 311.
 moor, culture of grass on, B., 457.
 and alkaline, crop yields on, B., 604.
 Alberta, oxidation of sulphur in, B., 602, 732.
 alder-bush, garden and sphagnum, carbon cycle in, A., 877.
 alkali, biodynamics of, B., 939, 1110.
 Illinois, cause of unproductiveness of, B., 82.
 leached, microflora of, B., 36.
 arable, physical-chemical changes in, caused by applications of dung, B., 988.
 action of frost on, and resulting effects on growth of oats and barley, B., 857.
 biochemistry of, B., 556.
 production of carbon dioxide in, B., 602.
 nitrification of stall manure in, B., 899.
 Arctic and Norwegian, phosphorus and lime contents of, A., 1266.
 arid, adsorption by, in relation to salt injury in the tropics, B., 988.
 Armenian, A., 460.
 Bavarian, relationships between maps and cropping charts of, B., 1067.
 Black Sea, agricultural characteristics of, A., 192.
 calcareous, effect of barnyard manure on, B., 38.
 China, acid and alkali, B., 506.
 chernozem, replaceable cations in plants and, B., 773.
 liming of, B., 1022.
 action of phosphates on, B., 733.
 deep, fertilisers for, B., 1111.
 chernozem-like, of N. Dakota, A., 1266.
 clay, effect of water on reaction of, B., 688.
 sodium, flocculation of, B., 688.
 cultivated, physical chemistry of, B., 132.
 nitrogen conversion in, B., 80.
 at Echmiadzin, A., 460.
 eroded, characteristics of, B., 897.
 fertile, B., 986.
 field, potash reserve in, B., 456.
 forest, changes in acidity and humus content of, B., 602.
 colloid content and quality of, B., 1022.
 humus formation and destruction by fungi in, B., 897.
 factor for calculating organic matter in, from carbon content, B., 856.
- Soils**, forest, nitrogen economy in, by removal of litter, B., 987.
 nitrogen compounds and humus in, A., 769.
 of the Havelland plains, B., 772.
 Hawaiian pineapple, nitrogen and organic matter in, B., 174.
 humus, neutral salt decomposition in, B., 454, 939.
 Hungarian, lime and nutrient materials in, B., 735.
 lowland, composition of, A., 708, 818; B., 216.
 Iowa, nitrogen fixation in, B., 214.
 Kenya, B., 559.
 of bed of Lake Albert, A., 930.
 of La Plata forests, B., 409.
 limed, fertilisation of, B., 1111.
 loam, Lufkin sandy, productivity of, B., 1067.
 loam and moor, drainage water from, B., 1111.
 market-gardening, sampling of, for nitrates, B., 601.
 meadow, nitrogen nutrition of, B., 82.
 mineral, acidity of, B., 454.
 solubility of phosphates and potash in, B., 81.
 acid, effect of superphosphates on, B., 898.
 moor, cultivation and agricultural use of, in 1925-29; B., 732.
 acidity and degree of saturation of, B., 602.
 buffer action of, B., 454.
 effect of burning on, B., 454.
 of Tekir-Ghiol and Agigee, A., 192.
 low moor, air content of, A., 708.
 mineralisation of humus nitrogen in, A., 459.
 Moravian, *Azotobacter* in, B., 601.
 of the Nelson mud flat, A., 1389.
 New York, composition of, A., 332.
 New Zealand, titanium in, B., 454.
 of the Nile and Gash, B., 772, 939, 1022, 1110.
 North Germany, in relation to their geological origin, A., 708.
 North Wales, clay, A., 192.
 N. and N.-W. Wyoming, effect of vegetation and climate on profiles of, B., 1149.
 orchard, concentration of constituents in solution of, B., 39.
 podsol, fineness of grinding of phosphates for, B., 940.
 Pusa, fertilisation of, B., 1110.
 red earth, A., 818.
 rice, irrigated, availability of phosphorus in, B., 557.
 Russian, fertility and fertiliser requirements of, B., 647.
 saline alluvial, influence of irrigation on, B., 214.
 salt, excrescences on, B., 506.
 sandy, effect of fertilisers on crop yield and reaction of, B., 360.
 South Australian, nitrate fluctuations in, B., 80.
 of S. Central Texas, plant growth in relation to microflora of, B., 939.
 surface and sub-, relative solubility of phosphoric acid of, B., 602.
 tropical, detection and determination of sesquioxides in, B., 311.
 virgin Mallee, salinity in, A., 596.
 Rumanian, acidity of, A., 192.
 Waranama Ranch, Berbice River, B., 82.
 sub-, geological structure of, (P.), B., 270.
 tuff-, of Maifeld, A., 192.
- Soils**, analysis of, B., 80, 689.
 mechanical analysis of, B., 174, 453, 855.
 apparatus for, B., 80.
 for field purposes, B., 80.
 temperature correction in, with hydrometers, B., 555.
 oxidation of organic matter in, B., 855.
 microbiological analysis of, B., 174, 603.
 detection of fluorine in, B., 506.
 detection of type differences in organic matter of, B., 80.
 calomel electrode for determination of, B., 214.
 determination of acid point of, B., 454.
 determination of acidity of, using potassium thiocyanate, B., 733.
 electrode for, B., 454.
 electrometric determination of lime and acidity of, B., 820.
 determination of base saturation of, B., 557.
 determination of base exchange and lime requirement of, B., 455.
 determination of absorbed bases in, B., 603.
 containing carbonates, B., 506.
 determination of exchangeable bases in, B., 603, 1066.
 electrodialysis apparatus for, B., 855.
 determination of replaceable bases and base-exchange capacity of, B., 81.

- Soils, determination of p_H of, B., 689.
 colorimetrically, B., 132.
 by the quinhydrone method, B., 214, 733.
 determination of organic carbon in, B., 1065.
 determination of total carbon in, B., 898.
 determination of carbonates in, B., 81, 186.
 determination of carbon dioxide in carbonates in, B., 1066.
 portable field apparatus for determination of chlorides in, B., 774.
 electrokinetic determination of colloids in, B., 856.
 determination of fertiliser requirements of, B., 37, 360, 603.
 determination of fertility of, with hydrochloric acid, B., 603.
 determination of humus in, B., 1022.
 determination of lime requirement of, B., 603, 690, 940.
 determination of lime and acid condition of, B., 856.
 determination of lime and fertiliser requirements of, B., 733.
 determination of manganese and phosphorus in, B., 556.
 determination of nitrogen requirement of, B., 37.
 determination of assimilable nitrogen in, B., 690.
 determination of available nitrogen, phosphorus and potash in, B., 360.
 determination of nutrient content of, B., 37, 453, 602, 689, 733.
 by the *Aspergillus* method, B., 689, 774.
 biochemically, B., 689.
 determination of mineral nutrient deficiencies in, by the Neubauer method, B., 774.
 determination of organic matter in, B., 602, 773.
 determination of phosphates in, B., 81, 557.
 determination of phosphates absorbed by, B., 456.
 determination of phosphate requirements of, B., 266, 557, 1022.
 determination of available phosphate in, B., 773, 1066.
 determination of phosphate and potash requirements of, B., 37.
 determination of phosphoric acid requirements of, B., 506.
 determination of assimilable phosphoric acid and potash in, by Neubauer's method, B., 987, 1066.
 determination of citric-soluble phosphoric acid in, colorimetrically, B., 81, 856.
 determination of phosphorus requirement of, B., 603.
 determination of available phosphorus in, B., 266.
 determination of potash requirements of, B., 360.
 with *Aspergillus niger*, B., 898.
 determination of potassium and phosphoric acid needs of, by culture of *Aspergillus niger*, B., 215.
 determination of sand in, B., 646.
 determination of replaceable sodium in, B., 940.
 determination of sulphur in, B., 555.
 determination of water in, B., 1066.
 Soil extracts, aqueous, micro-determination of silica in, B., 733.
 Soil solutions, relation of composition of, to plant growth, B., 689.
 influence of nitrogen fertilisers on composition of, B., 1112.
 Solanine, sublimation of, A., 1171.
 Solarisation, A., 1378.
 preparation of emulsions showing, B., 417.
 Solder, (P.), B., 981.
 preparation of pellets of, (P.), B., 725.
 for aluminium, etc., (P.), B., 765.
 phosphor-copper brazing, (P.), B., 353.
 Soldering, materials for, (P.), B., 765.
 fluxes for, (P.), B., 765.
 of metal articles, (P.), B., 302.
 Solids, apparatus for classification and washing of, (P.), B., 787.
 recovery of, by extraction, (P.), B., 952.
 separation of, from liquids, (P.), B., 519, 659, 953, 998.
 apparatus for, (P.), B., 141, 787.
 centrifugal separator for liquids and, (P.), B., 519.
 dry separation of, (P.), B., 570.
 separation or concentration of, by flotation, (P.), B., 952.
 measurement of concentration of, in liquids, (P.), B., 322.
 degree of fineness of, B., 47.
 immersion liquid for determination of refractive index of, A., 189.
 thermo-electric power, thermolysis and ionic mobility in, A., 312.
 molecular and atomic volumes of, A., 25.
 charge in molecular volume in reactions between, A., 444.
 entropy of, at absolute zero, A., 675.
 sifting of, (P.), B., 703.
 contact apparatus for gases and, (P.), B., 702.
 laws of movement of, in gases and liquids, B., 657.
 reactions in, at high temperatures, A., 447, 1244.
 crystal transformations in, A., 803.
 Solids, catalytic reactions between, A., 318.
 broken, mathematical relations for beds of, of maximum density, B., 950.
 crushed, treatment of, (P.), B., 2.
 dry, friction of, in vacuo, B., 1.
 granular, solution of, A., 1373.
 incandescent, scattering of electrons by, A., 12.
 loose, apparatus for handling of, (P.), B., 279.
 mixed, pneumatic separation of, (P.), B., 952.
 polymorphic, kinetics of transition in, A., 917.
 pulverised, production of, (P.), B., 658.
 apparatus for separation of, from gas currents, (P.), B., 322.
 vitreous, scattering of X-rays by, A., 550.
 Solid state, A., 552, 1115, 1244.
Solidago serotina, saponin in, A., 400.
 Solubility, A., 159.
 theory of, A., 558.
 of acids in salt solutions, A., 431, 566.
 of soluble electrolytes, A., 901.
 of gases, A., 1365.
 in liquids at high pressure, A., 793.
 of sparingly soluble liquids in water, A., 1119.
 of mixtures, A., 677.
 Solutio arseniatidis natrici, titration of, B., 610.
 Solutions, theory of, A., 1122.
 constitution of, A., 1367.
 X-ray diffraction in, A., 152.
 relation between refractive index and aggregation of solute in, A., 163.
 Raman effect in, A., 545.
 effect of dialysis on neutrality of, A., 423.
 Soret effect in, A., 168.
 pure, determination of concentration of, A., 924.
 precipitation of solutes from, (P.), B., 867.
 stratification in, A., 419.
 study of, by progressive desiccation, A., 564.
 of non-electrolytes, influence of neutral salts on properties of, A., 903.
 alcoholic, non-corrosive, (P.), B., 73.
 aqueous, electrolytic purification of, (P.), B., 892.
 temperature of maximum refractivity of, A., 1229.
 temperature of maximum density of, A., 162, 560.
 coloured, measurement of turbidity of, A., 906.
 concentrated, theory of, A., 296.
 correction of Raoult's law for, A., 296.
 hydrotropic, A., 1122.
 non-aqueous, adsorption in, A., 1227.
 solid, structure of, A., 157, 1223.
 crystallography of formation of, A., 901.
 Solvents, mutarotation in, A., 149.
 mobility of ions in, A., 1236.
 cooling on evaporation of, B., 665.
 recovery of, in explosives industry by the Bayer process, B., 743.
 action of, A., 680.
 catalytic action of, A., 918.
 influence of, on reactions, A., 1375.
 of graded composition, diffusion and distribution in, A., 167.
 for extraction of fatty oils, B., 894.
 dry-cleaning, apparatus for recovery of, (P.), B., 935.
 purification of, (P.), B., 347.
 non-aqueous, recovery of, (P.), B., 796.
 mixed, electrolytes in, A., 40.
 adsorption from, A., 1226.
 chemical kinetics in, A., 315, 316, 690.
 organic, influence of traces of water on solutions in, A., 902.
 modern, A., 1041.
 technical, analysis of, B., 433.
 volatile, recovery of, B., 874, 1132.
 Soot, adsorption of methyl-violet by, in relation to its use in rubber, B., 819.
 Soporifics, manufacture of aqueous solutions of, (P.), B., 318.
 Sorbitol, detection of, in wine, B., 413.
 determination of, in fruit preparations, B., 364.
 in wines, B., 778.
D-Sorbitol, effect of, on blood-sugar, A., 759.
 Sorghum, freezing point depression and conductivity of juices from, A., 775.
 hydrocyanic acid in, A., 1342.
 control of grain smut in, with dust fungicides, B., 990.

- Sound, velocity of, in alkali halides, A., 674.
 in carbon dioxide, A., 553.
 in liquids and solids, A., 416, 674.
 in nitrogen tetroxide, A., 553.
 apparatus for demonstration of absorption of, (P.), B., 912.
 damping of waves of, in homogeneous gaseous medium, A., 292.
 composition for deadening, (P.), B., 1127.
- Sound records, production of, (P.), B., 171, 1028.
- Soundproofing of materials, B., 66.
- Soya beans, germination of, A., 882.
 effect of fertility on carbohydrate-nitrogen relation in, A., 533.
 crystallisation of glutamic acid hydrochloride from proteins of, B., 475.
 lecithins of, A., 401, 600, 1033.
 nitrogen metabolism on diet of milk from, A., 1326.
 toxicity of phenol towards, B., 734.
 toxicity of urease from, A., 875.
 utilisation of, B., 475.
 use of, as feeding-stuff, B., 1070.
 treatment of, for use as food, B., 992.
 efficiency of, as green manure in relation to their maturity, B., 1150.
 for pigs, B., 176.
 Manchurian, composition of, and colours of seed-coat and hilum, A., 1341.
- Soya bean cake, as a feeding-stuff, B., 1119, 1153.
 treatment of, (P.), B., 1060.
- Soya bean curd, biological value of proteins of, A., 118.
- Soya bean meal for pigs, B., 176.
- Soya bean oil, B., 596.
 influence of temperature and pressure on hardening of, B., 849.
 iodine values of, A., 1341.
 crude, influence of conditions on preservation of, B., 500.
 determination of acidity of, B., 500.
- Soya hispida*, fatty oil from, B., 727.
 glucosides from, A., 1304.
 destruction of uricase in, without injury to other enzymes, A., 123.
 determination of allantoin in seeds of, A., 402.
- Space-groups, nomenclature for, A., 548.
- Sparassol, and bromo-, A., 777.
- Sparkling plugs, insulators for, (P.), B., 767.
- Sparteine, A., 241.
 occurrence of, in *Cheidonium majus*, A., 854.
- d*-Sparteine, and its salts, A., 499.
- Spectra, hyperfine structure of, A., 135, 275, 1204, 1205.
 effect of molecular diffusion on fine structure of, A., 147.
 intensity and width of lines in, A., 991.
 effect of strong electric fields on intensity in, A., 541.
 influence of slit width on intensity of lines in, A., 2, 781.
 intensities of transitions in, due to inner electric fields, A., 780.
 excitation of, by ionic collisions, A., 1348.
 collision broadening of lines in, A., 1104.
 satellites of $\kappa\beta$ line in, A., 138.
 irregular doublet law of, A., 1346.
 characteristic frequencies of radicals in, A., 146.
 interpretation of Fraunhofer lines in, A., 991.
 green line in, A., 1345.
 photon spin in, A., 1104.
 quadrupole multiplets in, A., 2.
 in the region 20-40 μ , A., 996.
 of ionised atoms, A., 781.
 of stripped atoms, A., 1104.
 of condensed electric discharge, A., 2.
 of elements, hyperfine structure in, A., 1103.
 of gases, Raman effect in, A., 787.
 of rare gases, A., 992.
 of chlorinated hydrocarbons, Raman effect in, A., 667.
 of liquids, A., 1211.
 of metals bombarded by low-speed electrons, A., 781.
 of decomposition products of organic compounds in the electrodeless discharge, A., 318.
 of night sky, A., 1.
 of stars, A., 1, 5, 663.
 absorption, and constitution, A., 544.
 and optical activity, A., 1209.
 influence of crystal lattice on, A., 282.
 of saturated chlorides, A., 667.
 of organic compounds, A., 1209.
 of polyhalides, A., 784.
- Spectra, absorption, infra-red, of the greater planets, A., 277.
 ultra-violet, A., 1210.
 absorption and fluorescence, mirror image correspondence of, A., 1351.
M-absorption, Moseley curves in, A., 405.
 arc, multiplet intensity in, A., 781.
 oscillating, A., 1.
 band, A., 1205, 1343, 1346, 1350.
 isotope effect on, A., 135.
 Stark effect in, A., 404.
 anomalous dispersion in, A., 669.
 repulsive energy levels in, A., 888.
 rotation temperatures of, in discharge tubes, A., 403.
 determination of temperature from, A., 663, 779.
 for symmetrical diatomic molecules, A., 282.
 cathode-ray continuous, A., 1105, 1345.
 complex, theory of, A., 2, 781, 1205.
 continuous, origin of, in Raman spectra, A., 146.
 emission, "resonance time" or time-lag in, A., 3.
 quantitative analysis of, A., 405.
 infra-red, A., 144, 996, 1111.
 reflexion of, by metals, A., 1111.
 under-water spark, A., 991.
 ionic, calculation of, A., 1346.
 magnetic, A., 1335.
 mass, measurement of, A., 407, 546, 1108, 1145.
 molecular, relation between structure and, A., 283, 544, 891, 892.
 and photochemical change, A., 1136.
 periodic, film drum for recording, A., 664.
 Raffety, A., 891.
 Raman, ultra-violet chromatic excitation of, A., 892.
 polarisation of, A., 668.
 dependence of scattering in, on frequency, A., 668.
 intensities in, A., 146, 147, 1211.
 effect of pressure on, A., 997.
 carbon-halogen linking related to, A., 893.
 of crystals, A., 1211.
 of hydrocarbons, A., 893.
 of inorganic crystals, A., 997.
 of liquids, A., 668, 1353.
 of small quantities of liquids, A., 892.
 of organic sulphides, A., 998.
 of sulphur compounds, A., 892.
 continuous, A., 997.
- Röntgen-ray, A., 151, 277, 888, 1205, 1206.
 fine structure of, A., 138.
 measurement of intensity of lines in, A., 1114.
 Raman lines in, A., 413.
 resolving power of, A., 1105.
 effect of cathode-ray diffusion on intensities of, A., 405.
 ionisation in, A., 1346.
 energy distribution in, A., 665.
 of concave crystals, A., 781.
 of gases, A., 4.
 of liquids, influence of shape and polarity of molecules on, A., 289.
 absorption, A., 405, 993.
 dependence of, on chemical and physical state, A., 665.
 influence of chemical combination on, A., 896.
 of gases, A., 138.
K-series, A., 888.
 continuous and line, A., 3.
 discontinuous absorption, A., 277.
 scattered, A., 3.
 secondary, of elements, aluminium to bismuth, A., 11.
K-series, structure of, A., 4, 1346.
L-series, of heavy elements, A., 405.
 soft, A., 782, 889.
 spark, A., 405.
 simple, extension of, A., 275.
 spark condensed, A., 991.
 ultra-violet, purity of, A., 1104.
 reflecting power and grating efficiency in, A., 1104.
 continuous, A., 1205.
 vacuum arc, A., 1344.
 vacuum spark, A., 539.
- Spectrograms, evaluation of, A., 405, 1346.
- Spectrograph, slit irradiation of, A., 781.
 plate shield for, A., 781.

- Spectrograph, magnetic, for α -rays, A., 16.
 mass, definition of, A., 783.
 spherical theory and construction of, A., 407, 1145.
 Röntgen-ray, for wave-length determinations in air, A., 548.
 slitless, for measurement of Doppler shift, A., 135, 991.
 vacuum, for measurement of long X-rays, A., 277.
 for extreme ultra-violet, A., 1387.
 fluorite, A., 1104.
- Spectrographic analysis, "star trail" method in, A., 329.
- Spectrography, with non-inclined plate, A., 18.
 X-ray high-voltage, instrument for, A., 1387.
- Spectrometers, double-crystal, A., 277.
 breadth of Compton line with, A., 889.
 Röntgen-ray, A., 1104.
 two-crystal, A., 1387.
 self-recording, A., 1387.
 vacuum, A., 1205.
- Spectrophotometers, A., 593, 1262.
 photo-electric, A., 814, 1350.
- Spectrophotometry, A., 1026, 1263.
 ultra-violet, A., 329.
- Spectroscopes with dispersion prism, (P.), B., 912.
 multiple interference, A., 1.
- Spectroscopic analysis, A., 327.
 comparator for, A., 57.
 micro-, A., 328.
 mitogenetic, A., 1083, 1332.
 organic, A., 1147.
 quantitative, A., 143, 702, 1143.
 by means of an arc, A., 991.
 by absorption of X-rays, A., 449.
 multiple spark stand for, A., 1387.
 emission, A., 924.
 Röntgen-ray, cathode-ray tube in, A., 328.
 of elements from tungsten to uranium, A., 4.
- Spectroscopy and chemical reactions, A., 892.
- Spermatozoa, stimulation of, by drugs, A., 871.
- Sphingomyelin, A., 245.
- Sphingosine, and its constitution, A., 829.
- Spinach, lipoids from leaves of, A., 776.
 organic acids of, A., 884.
 saponin from, B., 414.
 for canning, B., 221.
- Spinal cord, ox, cholesterol of, A., 975.
- Spindle-tree. See *Euonymus europæus*.
- Spinels, A., 289.
 structure of, A., 1001.
 blue, absorption of light by, A., 667.
 brown Ceylon, absorption and refraction of, A., 459.
 chromium and manganese, absorption spectra of, A., 545.
 gallium-zinc, A., 1359.
 red, blue, and violet Ceylon, colouring matters of, A., 459.
 solid, conductivity, diffusibility, and reactivity of, A., 999.
 synthetic, (P.), B., 677.
- Spinning of fibres, (P.), B., 108.
- Spinning apparatus, centrifugal, (P.), B., 389.
- Spinthariscopes, A., 815.
- Spirits, determination of quality of, by the Barbet test, B., 460.
 evaluation of, B., 859.
 cracked, determination of gums in, B., 524.
 motor. See Motor spirit.
 sulphite. See Sulphite spirit.
 detection of isopropyl alcohol in, B., 413.
- Spiritus camphoræ*, B., 221.
- Spiritus saponatus*, B., 222.
- Spiritus saponis kalini*, B., 222.
- Spirographis*, hæmin of, A., 109.
- Spirogyra*, permeability to urea of cells of, A., 774.
- Spleen, action of X-rays on, A., 765.
 rôle of, in genesis of bilirubin and cholesterol, A., 385.
 soluble enzymes in, A., 975.
 iron content of, A., 857.
 protein sulphuric acid ester from, A., 642.
 in cattle, cholesterol in, A., 507.
- Splenectomy, blood-lipins in, A., 865.
- Spores, membranes of, A., 536, 884.
- Sporopollenins, autoxidation of, A., 884.
- Sprays, removal of residues of, B., 509.
 water soluble arsenic in, B., 269.
- Sprays, oil, B., 1113; (P.), B., 559.
 polysulphide, B., 19.
- Springs, leaf-furnaces for heating of, (P.), B., 891.
- Spruce bark, Rumanian, use of, as tanning materials, B., 772.
- Spruce wood, lignin content of, according to climate, B., 436.
 rotting of, A., 886.
 determination of lignin in, B., 152.
- Sprue, non-tropical, with tetany, calcium and phosphorus metabolism in, A., 1325.
- Squab, protein in flesh of, A., 1442.
- Squalene, synthesis of, A., 333.
 formation of 1:2:5-trimethylnaphthalene from, A., 80.
- Stability, van 't Hoff's rule of, A., 430.
- Stachyose, behaviour of, when heated in glycerol, A., 1400.
- Staining of tissues, A., 975.
 differential, for diagnosis of Neisserian infection, A., 977.
- Stannic acid. See under Tin.
- Stanniphosphoric acid. See under Tin.
- Staphylococcus*, effect of dyes on inactivation of bacteriophage of, A., 1461.
 bouillon-filtrate vaccines for, A., 877.
- Stars, structure of, and opacity, A., 784.
 spectra of, A., 1, 1343.
 helium lines in, A., 5.
 hydrogen lines in, A., 663.
 sulphur in, A., 663.
 photovisual sizes of, A., 1104.
 building up of elements in, A., 282.
 energy of, and atomic synthesis, A., 1104.
- Starch, A., 606, 653, 1276, 1277.
 constitution of, A., 74, 469.
 α -glucopyranose units in, A., 941.
 amylo- and erythro-substances in, A., 941.
 properties of, A., 306, 1198.
 X-ray spectra of constituents of, B., 1069.
 migration velocity of constituents of, A., 1124.
 determination of tenacity of, B., 217, 1024.
 solutions, preparation of, for use in iodometry, A., 699.
 determination of consistency of, B., 649, 693.
 liquefaction and saccharification of, A., 982.
 effect of aliphatic amines and their hydrochlorides on saccharification of, by saliva, A., 873.
 gelation of, A., 1368; B., 1116.
 enzymic decomposition of, A., 422.
 influence of citrates on enzymic hydrolysis of, A., 520.
 effect of glutathione on enzymic hydrolysis of, A., 1190.
 action of salts on enzymic hydrolysis of, in presence of proteins, A., 1455.
 polarisation-reduction ratios of hydrolytic products of, A., 827.
 limiting hydrolysis of, by barley malts, B., 270.
 determination of products of takadiastase hydrolysis of, A., 1102.
 nitration of, (P.), B., 699.
 reaction of, with amylase and gelatin, A., 983.
 action of hydrofluoric acid on, A., 74.
 effect of plant-lectihin on, A., 39.
 action of ptyalin on, A., 653.
 methylated tri- and tetra-saccharides from, A., 337.
 iodine reaction for, A., 1366.
 effect of nitrites, thiocyanates, etc. on, A., 778.
 influence of granule size on value of, B., 1116.
 varieties of, A., 202.
 cold-water, manufacture of, (P.), B., 737.
 potato, increasing yield of, by phosphate manuring, B., 691.
 hydrolysis of, by oxalic acid, B., 901.
 phosphorus-containing degradation products of, A., 1277.
 determination of, polarimetrically, B., 778.
 potato and rye, fermentation of malts of, B., 39.
 potato and wheat, relations between phosphorus and nitrogen in, A., 941.
 soluble, A., 1124.
 preparation of, with hypochlorites, B., 822.
 detection of, by means of iodine-phenol, A., 130.
 determination of, iodometrically, A., 1277.
 influence of sodium chloride on, by the fermentation method, B., 821.
 in barley and malt, B., 561.
 in cereal products, B., 694.
 in finished goods and yarns, B., 292.
 in plants, A., 1342.

- Starch, determination of, in potatoes, B., 217, 362.
in vegetable preserves, etc., B., 221.
- Starch milk, starch content of, B., 411.
- Starch syrup, storage of, B., 648.
- Stark effect, A., 781, 991, 1107.
in band spectra, A., 404.
in intense electric fields, A., 4.
- States, corresponding, A., 1222.
- Static and dynamic displacement, theory of, A., 1007.
- Staybolts, copper, B., 252.
- Steam, condensers for, (P.), B., 955.
heat exchanger for desuperheating of, (P.), B., 746.
apparatus for separation of liquids from, (P.), B., 789.
saturated and superheated, heating value of, B., 785.
superheated, saturation of, (P.), B., 826.
See also Water vapour.
- Steam pipes, insulating coverings for, (P.), B., 746.
- Steam plant, preheater and degasifying plant for, (P.), B., 704.
conservation of heat in, (P.), B., 3.
- Steaming machines for garments, (P.), B., 347.
- Stearic acid, parachor of, A., 149.
aluminium salt, in paints, B., 1061.
basic iron and nickel salts, benzene dispersions of, A., 164.
ethyl ester, equilibrium of, with ethyl palmitate, A., 684.
metallic soaps, solubility of, B., 500.
- Stearic acid, dichloro-, anilide of, A., 1397.
- Stearmethyamide, derivatives of, A., 1397.
- Stearolic acid, formation of, from oleodichlorostearic acid, A., 1271.
- Stearolinolenozoomarin bromide, A., 602.
- Stearolinoleozoomarin bromide, A., 602.
- Stearo-oleozoomarin bromide, A., 602.
- Steel. See under Iron.
- Stencil sheets, (P.), B., 344, 583, 968.
manufacture of, (P.), B., 800, 879.
- Stereochemistry, origin of, A., 149.
and structure, A., 487, 1290.
of crystalline compounds, A., 411, 670, 1215.
- Stereoisomerism in polycyclic systems, A., 1166.
- Stereokinetics, A., 1241.
- Steric hindrance, A., 1151, 1407.
- Steric series, A., 825.
- Sterilisation, A., 267.
incenses for, (P.), B., 656.
of liquids, (P.), B., 908, 996.
apparatus for, (P.), B., 864.
of organic substances, (P.), B., 366.
See also Electrosterilisation.
- Sterols, reduction of, in intestines of infants, A., 113.
colour reactions of, with nitric acid, A., 529.
- Sterol group, A., 219.
- Steria rebaudiana*. See Kaá-hé-é.
- Steviol, A., 1100.
- Stevioside, A., 1100.
- Stibnite, complex indicatrix of, A., 1113.
- Stilbene, structure of, A., 27.
- Stilbene, *oo'*-dicyano- and 4:4'-dinitro-2:2'-dicyano-, A., 727.
p-nitro-, crystal structure of, A., 550.
- β -Stilbene dichlorides, optically active, A., 839.
- trans-oo'*-Stilbene derivatives, rotatory dispersion of, A., 962.
- Stilbenes, isomeric, ultra-violet absorption spectra of, A., 1110.
- Stilbene-azo-dyes, manufacture of, (P.), B., 798.
- oo'*-Stilbenebisaminocamphors, A., 962.
- oo'*-Stilbenebisaminoethylenecamphor, A., 962.
- oo'*-Stilbenebisiminocamphors, A., 962.
- Stills, heating of, with hot gases, (P.), B., 525.
vapour outlet for, (P.), B., 141.
control of pressure of vapours produced in, (P.), B., 703.
automatic, for mercury, A., 190.
- oil, (P.), B., 235, 577.
operation of, (P.), B., 914.
determination of hydrogen sulphide in gases from, B., 284.
pipe, (P.), B., 868.
- tube, (P.), B., 614.
- Stipa pulchra*, carbohydrate metabolism of, A., 660.
- Stirrers, electromagnetic, A., 816.
- Stomach, acid-base equilibrium after removal of, A., 382.
protein sulphuric ester from mucous membrane of, A., 379.
role of, in metabolism of urea, A., 385.
perfused, gaseous metabolism of, A., 866.
- pig's, fat of, A., 111
- Stone, artificial, manufacture of, (P.), B., 1096.
analysis of, B., 1051.
artificial and natural, grinding of, (P.), B., 296.
building, from Salamanca, production of patina on, B., 679.
natural, refractory, for industrial furnaces, B., 491.
porous, water- and weather-proofing of, (P.), B., 679.
road, manufacture of bituminous binders for, (P.), B., 397.
- Stopcock, tilting, A., 929.
- Storage vessels, prevention of corrosion of, (P.), B., 1029.
- Strainers, (P.), B., 424.
- Stramonium, assay of leaves and tincture of, B., 222.
- Straw, manuring with, B., 458.
immobilisation of nitrogen by, A., 1460.
cereal, effect of potash on stiffness of, B., 690.
rice, fermentation of, by *B. acetobutylicus*, B., 511.
- Straw pulp, yellow and bleached, production of, B., 714.
- Strawberries, relation of nitrogenous fertilisers to firmness and composition of, B., 312.
- Streptococci, hæmolytic, effect of catalase on potential of, A., 986.
- Strombosia*, oil from seeds of species of, B., 401, 816.
- Strontium, isotopes of, A., 1108.
- Strontium alloys with lead, production of, electrolytically, (P.), B., 208.
with mercury, A., 158.
- Strontium salts, effect of intracerebral injection of, A., 386.
- Strontium bromide hexahydrate, crystal structure of, A., 414.
chloride, formation of mixed crystals of, with cobalt and iron chlorides, A., 901.
hexahydrate, crystal structure of, A., 789.
fluoride, spectrum of, A., 1210.
effect of electrolytes on suspensions of, A., 1123.
- iodide hexahydrate, crystal structure of, A., 671.
- oxide, manufacture of, (P.), B., 631, 676.
- stannite, A., 320.
- sulphate, transformation of, (P.), B., 202*.
use of, in rubber, B., 1062.
- sulphide, preparation of, A., 1253.
phosphorescence of, A., 893.
- thioxystannite, A., 321.
- Strontium determination and separation :—
determination of, spectro-analytically, A., 327.
in minerals, A., 1259.
and its separation from barium, A., 187.
and its separation from calcium, A., 186.
- iso*Strophanthidic acid, derivatives of, and its conversion into deoxy- α -isostrophanthidic acid, A., 826.
- Strophanthidin, dehydrogenation of, A., 606.
correlation of periplogenin and, A., 827.
- iso*Strophanthidolic acids, methyl esters, A., 827.
- Strophanthin, A., 606, 826, 827, 1276, 1297.
pharmacological assay of solutions of, A., 119.
- g*- and *k*-Strophanthin, reactions of, A., 961.
- Strophanthins, detection of, A., 94.
- β -*iso*Strophanthonic acid, derivatives of, A., 1297.
- Strychnidine, salts of, A., 242.
- Strychnine, A., 750.
molecular structure of, A., 371.
toxicity of mixtures of quinine and, A., 1329.
action of, on human liver-esterase, A., 874.
masking of taste of, B., 273.
poisoning. See under Poisoning.
- sulphate, detoxication of, A., 1087.
action of iodides on, A., 1172.
- detection of, with Mandelin's reagent, B., 222.
with potassium ferrocyanide, A., 1079.
in organs, A., 1329.
- determination of, A., 1329.
in Easton's syrup, B., 861.
colorimetrically, in pharmacopœial preparations, B., 611.
- ψ -Strychnine, and its salts, A., 1312.
- Strychnos alkaloids, A., 242, 500, 855, 970, 1312, 1433.
- Stycolcarboxylic acid, dinitro-, constitution of, A., 750.
- Styracitol, A., 1033.
- Styrax japonica*, jegasaponin-cholesterol from, A., 401.
- Styrene, manufacture of, (P.), B., 238, 1004.
photo-polymerisation of, A., 1019.
manufacture of artificial masses from, (P.), B., 309.
- Styrene, *o*-bromo-*m*-dinitro-, A., 1419.
- Styrenes, and their homologues, manufacture of, (P.), B., 335.

- 2-Styrylaminobenzthiazole, 2-*p*-amino-, acetyl derivative, methochloride of, A., 764.
- β -Styrylcinnamic acid, and its derivatives, A., 1392.
- 2-Styryldimethylaminobenzthiazole, 2-*p*-amino-, acetyl derivative methiodide of, A., 764.
- Styrylmethylcarbinols, isomeric, preparation of, and their derivatives, A., 349.
- Styryl methyl ketone, oxidation of, by peracids, A., 1050.
- Styryl β -phenylethyl ketone, semicarbazone of, and 2-hydroxy-, A., 964.
- Styryl γ -phenylpropyl ketone, and 2-hydroxy-, A., 964.
- Styrylpyrylium salts, A., 964.
- Styrylquinolines, *d*-amino-, and aminonitro-, derivatives of, A., 1187.
- 2-Styryl-4-quinolone-3-propionic acid, β -6-nitro-, A., 1166.
- 6-Styryl-1:3:5-triazine, 2-amino-4-thiol-, and its salts, A., 368.
- Suberic acid, A., 713.
- Suberolic acid, A., 713.
- Sublimation, fractional, A., 704.
- micro-, A., 246.
- vacuum, under the microscope, A., 928.
- Substance, $C_4H_2O_7N_6$, and its derivatives, from acetylene and nitric acid, A., 194.
- C_6H_5ONBr , from acetobromo-*l*-rhamnose and trimethylamine, A., 70.
- C_6H_5Hg , from *o*-dibromobenzene and sodium amalgam, A., 244.
- $C_6O_2I_4$, from hexa-iodobenzene and nitric acid, A., 207.
- $C_7H_5O_6$, from glycerol, hydrocyanic acid and hydrochloric acid, A., 933.
- $C_8H_{12}O_2$, from oxidation of 1:1:3-trimethyl- Δ^2 -cyclohexene-4:6-dione, A., 488.
- $C_8H_{12}O_2Cl_2$, and its hydroxy-derivative, from chloroacetone and dimagnesium dibromoacetylene, A., 937.
- $C_9H_{14}O_2$, from nopinene ozonide and potassium hydroxide, A., 230.
- $O_9H_{19}N$, and its salts, from Rumanian petroleum, A., 1396.
- $C_{10}H_{10}S_2$, and its chloroaurate, from *d*-limonene and sulphur, A., 95.
- $C_{10}H_{12}O_2NCl$, from resorcinol and propionyl cyanide, A., 92.
- $C_{10}H_{13}ONCl_2$, from 5-chloroacetyl-2:4-dimethyl-3-ethylpyrrole, A., 494.
- $C_{11}H_{10}O_2N_2$, from ketoyobyrine and potassium hydroxide, A., 370.
- $C_{11}H_{12}O_3N_2$, from benzaldehyde 2-methylsemicarbazone benzylamine, A., 613.
- $C_{12}H_{22}O_2$, from oxidation of cadinene, B., 698.
- $C_{13}H_9O_6ClSg$, from xanthione and silver perchlorate, A., 218.
- $C_{14}H_{12}O$, from reduction of benzoin, A., 958.
- $C_{15}H_9O_2NCl_4$, from quinolquinolinium chloride and thionyl chloride, A., 838.
- $C_{15}H_{14}O_2SCl_2Hg$, from di-*o*-anisyl thioketone and mercuric chloride, A., 218.
- $C_{16}H_6O_3Cl_2$, from oxidation of 6-diethylacetyl-2:5-dimethylbenzoic acid, A., 1296.
- $C_{16}H_{12}OCl_4$, from 2:5-dichlorobenzhydrol and sodium methoxide, A., 1283.
- $C_{16}H_{14}ON_2$, from succindianilide, A., 495.
- $C_{16}H_{20}O_3N_2$, from hexahydrophthalamic acid and acetyl chloride, A., 1291.
- $C_{17}H_{19}Li$, from lithium isopropyl and *as*-diphenylethylene, A., 502.
- $C_{17}H_{20}O_2N_2$, from benzaldehyde 2-methylsemicarbazone and benzylamine, A., 613.
- $C_{17}H_{20}O_4N_2$, and its perchlorate, from oxidation of tetrahydrostrychnine, A., 242.
- $C_{18}H_{10}O_2$, and its derivatives, from phthalic anhydride and β -naphthol, A., 1292.
- $C_{20}H_{24}$, from tetrahydronaphthalene and alkyl bromides, A., 208.
- $C_{22}H_{14}O_2$, derivatives of, from oxidation of bromodiphenylbenzofulvene, A., 949.
- $C_{24}H_{26}O_8N_2$, from *pp'*-diphenyltetrazonium hydroxide and methyl methylmalonate, A., 211.
- $C_{24}H_{18}O_4N_4S_2$, from oxidation of *p*-nitrophenylthiolaniline, A., 1285.
- $O_{27}H_{30}O_3N_2$, from 1:4-dihydroxynaphthalenepyrindinium chloride and aniline, A., 838.
- $C_{29}H_{16}O_2$, from fluorene-9-carboxylic acid and pyridine, A., 1414.
- $C_{28}H_{14}O_4N_2S$, from anthraquinone-2-sulphonyl chloride and 2-aminoanthraquinone, A., 1285.
- Substance, $C_{30}H_{22}O_2$, and its oxonium salt, from naphthalic anhydride and lithium phenyl, A., 1415.
- $C_{30}H_{38}O_8N_4$, from *pp'*-diphenyltetrazonium hydroxide and ethyl ethylmalonate, A., 211.
- $C_{33}H_{26}N_4$, and its zincchloride, from benzaldehyde phenylhydrazine, phenylhydrazine and zinc chloride, A., 957.
- $O_{33}H_{28}O_{10}N_8As$, from 1:3-dihydroxybenzene-4-azo-*p*-phenylarsinic acid and tetrazodiphenyl chloride, A., 106.
- $C_{36}H_{30}O_8N_{10}As_2$, from 1-amino-3-hydroxybenzene-4-azo-*p*-phenylarsinic acid and tetrazodiphenyl chloride, A., 106.
- $C_{42}H_{17}O_8N_6S_2Cl_5$, from 2:4-diaminothiophenol and chloranil, A., 1289.
- $C_{45}H_{27}O_8N_3S_6$, from zinc *p*-toluidine-2:5-dimercaptide and chloranil, A., 1289.
- Substitution, aromatic, directive power of groups in, A., 479.
- stereochemical influences on, A., 83.
- oriented, influence of directing groups on nuclear reactivity in, A., 1405.
- Substitution reactions, course of, A., 215.
- Succin-*p*-aminoanilide, and its acetyl derivative, A., 210.
- Succinanilamide-*p*-arsonic acid, and its salts, A., 636.
- Succinanildimethylamide-*p*-arsonic acid, and its sodium salt, A., 636.
- Succinanilethylamide-*p*-arsonic acid, and its sodium salt, A., 636.
- Succinanilido-*pp'*-diarsonic acid, and its disodium salt, A., 636.
- Succinanilino-*n*-propylamide-*p*-arsonic acid, A., 1078.
- Succinanilmethylamide-*p*-arsonic acid, and its sodium salt, A., 636.
- Succinanilpiperidide-*p*-arsonic acid, A., 636.
- Succinic acid, polymorphism of, as function of temperature, A., 198, 1036.
- biological oxidation of, A., 525.
- action of *Bacillus pyocyaneus* on, A., 526.
- occurrence of, in corpses, A., 981.
- salts, enzymic equilibria of, with fumarates, A., 1189.
- dimethylammonium hydrogen salt, A., 204.
- sodium salt, effect of injections of, A., 762.
- ethyl ester, electric moment of, in kerosene, A., 786.
- derivatives, unsaturated, A., 956.
- Succinic acids, *dichloro*-, methyl esters, dipole moments of, A., 24.
- Succinilide-*p*-arsonic acid, A., 636.
- Succinimide, manufacture of gold derivatives of, for therapeutic use, (P.), B., 319.
- Succinimidoauric acid, and its salts, A., 1172.
- Succino-*n*-butylimide, A., 365.
- Succinodihydrogenase, effect of visible and ultra-violet light on, A., 391.
- Succinyldiurethane, A., 830.
- Succinylphenylcarbamide, A., 830.
- Sucrose (*saccharose*; *cane sugar*), extraction of, from cane molasses, (P.), B., 649.
- from its impure solutions, (P.), B., 901.
- from beet molasses, (P.), B., 649.
- enzymic synthesis of, A., 1193.
- pure, contamination of solutions of, by containing vessels, B., 737.
- effect of, on conductivity of electrolytes, A., 1012.
- heat of dilution of, in aqueous solution, A., 433.
- surface tension of aqueous solutions of, A., 300.
- solubilities of inorganic substances in, with reference to carbonation, B., 736.
- solubility of lime in solutions of, B., 777.
- constitution of solutions of, A., 1012.
- biological filtration of dilute solutions of, A., 1335.
- crystals, photomicrographic studies of, B., 858.
- equilibrium of, with water and alkali chlorides, A., 1005.
- photochemical hydrolysis of, A., 1019.
- hydrolysis of, by strong acids in presence of their salts, A., 802.
- by aqueous extracts of mushrooms, A., 653.
- fission of, by α -glucosidase from yeast, A., 653.
- inversion of, by platinised charcoal saturated with hydrogen, A., 47.
- influence of strong electrolytes on, by hydrochloric acid, A., 1245.
- by invertase, A., 916.
- by tartaric acid, A., 1242.
- in mixed solvents, A., 1132.
- oxidation of, by bleaching powder, B., 821.
- biological oxidation of, A., 525.
- reduction of silver chloride by, A., 1379.

Sucrose, structure of laevan synthesised by action of *L. subtilis* on, A., 1276.
 influence of reducing sugars on caramelisation test for, B., 901.
 determination of, by double-polarisation, B., 693, 1152.
 in beetroot, B., 458.
 in sweet wines, B., 460.
 See also Sugar.
 "Sutrogl," sensitivity to poisons after treatment with, A., 121.
 Sugar, manufacture of, (P.), B., 738*, 902*.
 filtration of juice in, B., 361.
 chains in diffusion battery for, B., 1114.
 extraction of, from milk whey, (P.), B., 861.
 asbestos for filtration of, B., 270.
 purification of, in presence of sea water, B., 411.
 ash content and recovery of, B., 559.
 dryer for, (P.), B., 649.
 crystallisation of, B., 1115; (P.), B., 788.
 increasing velocity of, B., 606.
 industrial crystallisation of, B., 411.
 presence of non-sugars in crystals of, B., 84.
 carbonatation of, and washing of scums, B., 736.
 calcium carbonate hydrate in, B., 510.
 control of end-point of, B., 736.
 effect of rate of boiling on sulphur dioxide in mixtures of corn syrup and, B., 1115.
 in blood. See under Blood.
 in urine. See under Urine.
 beet, manufacture of, (P.), B., 85.
 from dried beets, B., 1114.
 by the Oxford process, B., 410.
 nitrogenous substances in, B., 777.
 sulphuring in, B., 1151.
 diffusion plant for, (P.), B., 177*.
 hygroscopicity of, B., 561.
 raw, influence of storage on affinity quality of, B., 776.
 determination of affining values of, conductometrically, B., 900.
 analysis of, B., 900.
 brown beet and raw cane, carbonatation and sulphitation of, B., 270.
 cane, decomposition of reducing sugars in manufacture of, B., 561.
 "plus-sugar" in pulp from, B., 411.
 raw, filterability of, B., 1151.
 refined, ash and electrical conductivity of, B., 692.
 invert, determination of, volumetrically, B., 216.
 in presence of sucrose, B., 176.
 in raw sugars, B., 561.
 in raspberry syrup, B., 1154.
 loaf, decolorisation of "greens" from refining of, B., 1069.
 Philippine, deterioration of, at varying degrees of humidity of, B., 561.
 raw, polarisation of, B., 270.
 affining of, (P.), B., 1152.
 treatment of, with Russian activated charcoal, B., 777.
 effect of humidity on deterioration of, on storage, B., 84.
 gums in solutions of, B., 736.
 determination of ash in, conductometrically, B., 737.
 determination of salts in, conductometrically, B., 736.
 determination of invert sugar in, B., 561.
 refined, action of non-sugars of, on caramelisation test, B., 561.
 vanilla. See Vanilla sugar.
 white, production of, (P.), B., 901.
 impurities in, B., 648, 1115.
 measurement of colour in solutions of, B., 648.
 determination of phosphorus in, B., 648.
 determination of sulphur compounds in, B., 1115.
 wood, B., 941.
 determination of, by double polarisation, B., 84.
 iodometrically, B., 606.
 in apples, B., 1120.
 in exhausted beet slices, B., 692, 1152.
 in carbonatation scums, B., 736.
 in filter-press cakes, B., 176.
 in sugar cane, B., 899.
 determination of losses of, in water from the barometric condenser, B., 1115.
 Sugars, formation of, from cellulose and cellulose materials, (P.), B., 411, 412.
 occurrence of, A., 1037.

Sugars, syntheses of, A., 1399.
 hydrazone structures in, A., 1276.
 lattice structure of, A., 1116.
 with branched carbon chains, A., 70.
 optical rotatory powers of, A., 825.
 effect of sodium bisulphite on polarising power of, B., 131.
 dismutation of, A., 939, 1275.
 relationship of kojic acid to products of, A., 1399.
 potential of solutions of, A., 1013.
 action of marine algae on alcoholic fermentation of, A., 1091.
 oxidative decomposition of, A., 605.
 oxidation of, A., 1038.
 in alkaline solution, by gaseous oxygen, A., 336.
 by yeast, A., 1457.
 degradation of, in alkaline solution, in presence of oxidising agents, A., 70.
 in the animal organism, A., 257, 513.
 effect of, on formation of colloidal ferric hydroxide, A., 304.
 phosphorylation of, by yeast, A., 1332.
 action of hydrogen sulphites on, A., 1038.
 in plants, effect of potassium on, A., 133.
 effect of injection of, on phosphorus and water metabolism, lactic acid production, and respiratory metabolism, A., 512.
 intravenous injection of, and their assimilation, oxidation, and metabolism, A., 257, 258.
 nutritive value of, A., 646.
 fermentation of, by rat's liver, A., 123.
 metabolism of. See under Metabolism.
 polybasicity of, A., 1129.
 unsaturated reduction products of, A., 336, 939, 1275.
 rotatory dispersion of aldehyde-acetates of, A., 1039.
 anhydrides of, A., 69.
 carboxylic acids derived from, A., 1403.
 formation of fats from, A., 1266.
 hydrazones, rotatory powers of, A., 938.
 hydrazones and osazones of, A., 1274.
 optical rotation of methylated lactones from, A., 200.
 action of mercury salts on acetohalogeno-derivatives of, A., 72, 1039, 1040.
 bromoacetyl derivatives, preparation of, A., 336.
 isopropylidene derivatives, A., 71.
 dicarbonyl, A., 1275.
 epimeric, saccharals of, A., 1038.
 methylated, reactivity of, A., 1307.
 mixed, fermentation of, by Sauter yeast, A., 263.
 reducing, determination of, A., 1102, 1190.
 with copper solutions, A., 187.
 with cupro-potassium carbonate, A., 199.
 by ferriocyanide method, A., 1274.
 volumetrically, B., 216.
 in presence of sucrose, B., 458.
 analysis of, A., 1038.
 Molisch test for, A., 1179.
 determination of, volumetrically, A., 538.
 in marzipan, B., 1069.
 Sugars, amino-, synthesis of peptide-like substances from, A., 470.
 thio-, and their derivatives, A., 73, 939.
 Sugar beet. See Beetroot, sugar.
 Sugar cane, acidity of juice of, during grinding, B., 735.
 recovery of fibrous material from, (P.), B., 627.
 toxic action of magnesia on, B., 83.
 effect of fertilisation with molasses on, B., 604.
 root-rot in, B., 559.
 determination of sugar in, B., 899.
 Sugar factories, calculation of production in, B., 85.
 dilution of products in, in relation to purity, B., 84.
 imbibition in, B., 560.
 treatment of effluents from, B., 1156.
 sulphitation in, B., 1151.
 action of sulphides on filter-cloths in, B., 648.
 detection of inversion during crushing of cane in, B., 735.
 conductometric analysis in, B., 39.
 Sugar factory products, electrical conductivity and ash content of, B., 459.
 Sugar group, degradations in, A., 199.
 Sugar industry, active charcoals and other adsorbents in, B., 705.
 colour in, B., 270.

- Sugar juice, purification of, B., 1114; (P.), B., 901, 1152.
 by Teatini's process, B., 736, 1151.
 determination of losses in, B., 561.
 use of phosphates in clarification of, B., 900.
 clarification and decolorisation of, (P.), B., 901.
 filtration of, in sulphitation, B., 560.
 effect of scum particles in boiling up and evaporation of, B., 941.
 influence of composition of, on their darkening during evaporation, B., 900.
 dilution and comparative purities of, B., 561.
 deterioration of, B., 459.
 carbonatation of, B., 900, 1151.
 porosity of scums from, B., 941.
 beet, purification of, B., 606, 777, 1114.
 by the magnesia process, B., 777.
 carbonatation of, B., 560, 777, 1114.
 influence of dextran fermentation products on, B., 560.
 first carbonatation of, B., 900.
 over-carbonatation of, B., 736.
 evaporation of, B., 560.
 coloration of, in evaporators, B., 84.
 digestibility of protein scums from defecation of, B., 648.
 influence of pre-liming on, B., 648.
 glycerophosphoric acid in liming and saturation of, B., 900.
 sulphitation of, B., 1115.
 behaviour of "sugar-soluble" silicic acid in, B., 509.
 indication of alkalinity in saturation of, B., 777.
 determination of alkalinity of, B., 561.
 cane, ash content of, B., 900.
 use of lime and sulphurous acid in defecation of, B., 736.
 colloids in, B., 1150.
 vitamins in, B., 270.
 Uba, clarification of, B., 176.
 Java, hot-liming of, B., 1151.
 diffusion, number of micro-organisms in, B., 900.
 thin, sulphitation of, B., 411.
 determination of calcium salts in, B., 561.
 Sugar products, turbidity in, B., 1116.
 devitrification of, B., 901.
 evaluation of, B., 1069.
 analysis of, by the fluorescence method, B., 901.
 Sugar solutions, purification and decolorisation of, (P.), B., 737.
 decolorisation of, with chlorine for analysis, B., 900.
 Japanese diatomaceous earths as filtering media for, B., 777.
 measurement of turbidity of, with a spectrophotometer, B., 606.
 oxidation reduction potentials of, A., 569.
 volumes of, at different temperatures, B., 84.
 Brix and gravity tables for, B., 737.
 viscosity of, B., 510.
 adsorption from, B., 84, 459.
 by carbon, B., 560.
 surface tension of, B., 778.
 over-carbonatation of, B., 560.
 strength of, from bone-black filters, B., 777.
 precipitation of lime by sulphurous acid in, B., 510.
 behaviour of "sugar-soluble" silicic acid in, B., 509.
 alkaline, decomposition of, at high temperatures, B., 509, 1151.
 catalytic action in coloration of, on heating, B., 510.
 determination of dextrose in, microchemically, A., 939.
 Sugar syrups, treatment of, with invertase, (P.), B., 901.
 conductometric formula for determination of ash in, B., 692.
 Sulphatase, relation between activity of phosphatase and, A., 1331.
 Sulphates. See under Sulphur.
 Sulphate pulp, treatment of waste-liquors from manufacture of, (P.), B., 972, 1138.
 effect of beating on, B., 340.
 Sulphides. See under Sulphur.
 Sulphidobis- β -hydroxydiethyl sulphide di- β -hydroxyethochlorides and their salts, A., 463.
 Sulphinic acid, chloro-, ethyl ester, A., 934.
 phenyl ester, A., 473.
 Sulphinic acids, organic, A., 64.
 Sulphinic acids, chloro-, ethyl, methyl, and isopropyl esters, A., 462.
 2-Sulphinophenylarsenious oxide, reduction product of, A., 244.
 Sulphites. See under Sulphur.
 Sulphite liquors, recovery of sodium sulphite from, (P.), B., 200.
 waste, treatment of, B., 110.
 utilisation of, B., 241.
 Sulphite pulp, production of, (P.), B., 533, 1136.
 from young wood, B., 713.
 Sulphite pulp, reactions of sulphites with sugar and lignin in preparation of, B., 625.
 effect of beating on properties of, B., 340.
 measurement of bleachability and cooking degree of, B., 713.
 bleaching of, B., 1088.
 cooking of, with strong acids, B., 713.
 control of digestion of, B., 388.
 evaporation of waste liquors from, B., 1089.
 growth of moulds on, B., 240.
 Sulphite spirit, fermentation of, (P.), B., 363.
p-Sulphobenzeneazobenzophenylaminesulphonic acids, A., 1431.
 2-Sulphobenzimidazole-5-arsinic acid, A., 106.
 2-*p*-Sulphobenzoylnaphthalene-3-naphthoic acid, sodium salt, A., 1064.
 2-Sulphodiphenylamine-3-carboxylic acid, 2':4'-dinitro-4-hydroxy-, A., 725.
 Sulphonol, solubility of, in ethyl alcohol, A., 558.
 analgesic range of, A., 1453.
 Sulphonation of fats, fatty oils, fatty acids, and aliphatic hydrocarbons of high molecular weight, (P.), B., 684.
 Sulphonefluorescein, tetraiodo-. See Resorcinoltetraiodosulphonephthalein.
 Sulphonephthaleins, colour changes of, A., 956.
 Sulphonic acids, production of, from oils, (P.), B., 474.
 aliphatic, production of, (P.), B., 1133.
 stability of carbon-sulphur linking in, A., 1268.
 organic, A., 64.
 with univalent oxygen, formation of, from 1-arylanthraquinones, A., 846.
 salts, preparation of solutions of, (P.), B., 476.
 amides and esters, reaction of, with piperidine, A., 629.
 Sulphonium mercuri-iodides, constitution of, A., 26, 106.
 Sulphonyl chlorides, reaction of, with nitroaminophenols, A., 1287.
 fluorides, aromatic, preparation of, A., 1405.
 4-Sulphophenylarsinic acid, 3-nitro-, A., 1434.
 2-*p*-Sulphophenyl-3-4-naphth-1:2:3-triazole-1-sulphonic acid, and its disodium salt, A., 1431.
 β -Sulphophenylpropionic acids, salts of, A., 955.
 Sulphosalicylic acid, as fixative in block staining, A., 755.
 and 5-bromo-, 5-amino-, and nitro-, and their salts and derivatives, A., 482.
 determination of, A., 1079.
 6-Sulphosalicylic acid, 5-amino-, synthesis of nitro-dye from, A., 725.
 Sulphoundecic acids, hydroxy-, and their acetyl derivatives, A., 824.
 Sulphur, atomic weight of, A., 279.
 isotopes of, A., 1348.
 production of, (P.), B., 20, 1049, 1140.
 pure, (P.), B., 63.
 from sulphur dioxide, (P.), B., 758, 1140.
 catalytic production of, (P.), B., 295.
 extraction of, from industrial gases, (P.), B., 576.
 recovery of, from gases, (P.), B., 925, 1036, 1140.
 from roaster gases, (P.), B., 439.
 from ores, (P.), B., 247.
 from pyrites, (P.), B., 588.
 from pyritic ores, (P.), B., 810.
 from sulphide ores, (P.), B., 925.
 purification of, (P.), B., 632.
 apparatus for, (P.), B., 21.
 removal of arsenic and chlorine from, (P.), B., 758.
 sublimation apparatus for, (P.), B., 439.
 spectrum of, A., 779.
 and its molecular moment of inertia, A., 663.
 band spectrum of, A., 1203, 1344.
 emission spectrum of, A., 275, 540.
 fluorescence spectrum of, A., 6, 670.
 resonance spectrum of, A., 404, 540, 663, 992, 1203.
 Röntgen-ray spectrum and structure of, A., 888.
 in stellar spectra, A., 663.
 X-ray structure of mixed crystals of selenium and, A., 788.
 variable valency of, A., 547.
 molecules, diatomic, magnetic moment of, A., 1114.
 magnetic rotation of, in solution, A., 1214.
 vapour, apparatus for condensation of, (P.), B., 972.
 effect of Siemens electric discharge on, A., 440.
 diatomic, energy levels in, A., 1103.
 equilibria of, with carbon iron, B., 807.
 with ferrous and ferric sulphides, A., 169.

Sulphur, photochemical oxidation of, A., 1136.
 affinity of metals for, A., 169.
 influence of, on pure iron, B., 590.
 effect of moisture on the reaction of silver with, A., 692.
 and its compounds, action of, in production of Portland cement, B., 493.
 burners for, (P.), B., 1009.
 purification of gases containing, (P.), B., 295.
 biochemistry of, A., 647, 831, 1081, 1450.
 fungicidal action of, B., 821.
 biological oxidation of, B., 457.
 oxidation of, in soils, B., 173.
 effect of, on growth, A., 1086.
 antagonism between adrenaline and, A., 879.
 parenterally administered, fate of, in the organism, A., 516.
 colloidal, preparation of, (P.), B., 1094.
 influence of electrolytes on, A., 37.
 natural nacreous, A., 1390.
 plastic, structure of, A., 548.
 sublimed, action of ultra-violet light on, A., 806.
 supercooled, and its solutions, dielectric constant of, A., 285.
 volcanic, from Papandajan, A., 816.
Sulphur compounds, manufacture of, (P.), B., 882.
 absorption spectra of, A., 1211.
 Raman effect for, A., 785.
 thermal behaviour of, in hydrocarbon solvents, A., 1393.
 removal of, from gases, (P.), B., 148*, 191, 527.
 detection of, in gasoline, B., 1034.
Sulphur monochloride, B., 488.
 chlorides, properties of, A., 438.
Sulphuryl chloride, preparation of, A., 323.
 action of, with reactive methylene groups, A., 1036.
 molecular compound of, with *p*-benzeneazophenol, A., 613.
Thionyl chloride, production of, (P.), B., 157, 840.
 reaction of, with anilic acids, A., 339.
 molecular compounds of, with hydroxyazo-compounds, A., 613.
Sulphur hexafluoride, preparation and physical properties of, A., 52.
 dioxide, production of, (P.), B., 758.
 recovery of, from mineral oils, (P.), B., 56*.
 from smelter gases, (P.), B., 21.
 recovery and utilisation of, from sulphur extraction, B., 839.
 removal of trioxide from, (P.), B., 1140.
 absorption spectrum of, A., 144.
 ultra-violet absorption spectrum of, A., 891.
 electrical conductivity of mixtures of water and, A., 171.
 critical solution temperatures of systems of paraffins and, B., 470.
 liquid, moisture in, B., 839.
 anhydrous, B., 803.
 vapour pressure and conductivity of aqueous solutions of, A., 1234.
 density of, A., 1117.
 solubility of, in sulphuric acid, A., 1119.
 equilibria of, with ammonium or alkali iodides, A., 799.
 decomposition of, on platinum, A., 1246.
 oxidation of, (P.), B., 295.
 ozonation of, A., 1017.
 action of, on amines, A., 1011.
 on calcium oxide, A., 311.
 concentrated, production of, (P.), B., 247.
 compounds of, with ammonia, A., 1021.
 determination of in air, B., 60.
 trioxide, production of, from dioxide, (P.), B., 840.
 catalyst for, (P.), B., 540.
 complexity of, A., 447.
 absorption of, in wash-bottles, A., 815.
 equilibria of cupric oxide, ferric oxide, water, and, A., 800.
 oxides, apparatus for production of, (P.), B., 21.
Sulphides, mineral, reactions of, with acyclic organic compounds, A., 710.
 natural, reaction of, with acyclic compounds, A., 710.
 quantitative precipitation of, in buffered solutions, A., 325.
Polysulphides, determination of, B., 587.
Sulphurous acid, ozonation of, A., 1017.
 action of, on metallic sulphides, A., 1255.
Sulphites, autooxidation of, A., 917.
 determination of, colorimetrically, in presence of thiosulphates, A., 326.
 in presence of nitrites, B., 391.

Sulphur :—

Sulphuric acid, manufacture of, (P.), B., 61, 63, 630, 881.
 pure, (P.), B., 111, 348, 537.
 by the chamber process, B., 110, 347, 674, 880.
 theory of, B., 585.
 nitric acid feeder for, B., 486.
 loss of nitrous products in, B., 18.
 chambers for, (P.), B., 839.
 by the contact process, B., 347, 755; (P.), B., 803.
 catalyst carriers for, (P.), B., 488.
 utilisation of waste gases from, (P.), B., 840.
 recovery of gases rich in sulphur dioxide from, (P.), B., 718.
 from waste gases containing hydrogen sulphide and carbon dioxide, (P.), B., 717.
 characteristics of calcium-vanadium catalyst for, B., 716.
 Kessler apparatus for, B., 629.
 U.S. Naval plant for, B., 629.
 with simultaneous production of metals, from metallic sulphates, (P.), B., 630.
 and nitric acid, (P.), B., 61.
 recovery and purification of, from acid sludge, (P.), B., 840.
 purification of, (P.), B., 718.
 removal of arsenic from, (P.), B., 757.
 centrifugal atomisers for, (P.), B., 156.
 concentration of, (P.), B., 111.
 apparatus for, B., 1137; (P.), B., 840.
 concentrated, electrical conductivity of, at high temperatures, A., 568.
 reconcentration of mixture of nitric acid and, B., 60.
 Raman spectra of, A., 997.
 activity coefficients of, in acetic acid, A., 1127.
 thermochemistry in the system ammonia and, A., 913.
 heats of absorption of nitrogen oxides by, A., 685.
 heat of dilution of mixtures of nitric acid and, A., 1128.
 liquid and solid, specific gravities of, A., 295.
 freezing points of mixtures of nitric acid and, A., 1369.
 adsorption of, by leather, B., 79.
 absorption of nitrogen oxides by, and denitration thereof, B., 969.
 absorption of olefines by, (P.), B., 192.
 equilibrium of, with potassium sulphate and water, A., 911.
 action of, on copper, A., 581.
 with lead bromide, A., 323.
 on olefines, B., 575.
 effect of sulphur trioxide on decomposition of oxalic acid by, A., 315.
 decomposition of halides by mixtures of chromic acid and, A., 690.
 waste, working-up of, from washing of mineral and tar oils, (P.), B., 332.
 standardisation of solutions of, A., 1023, 1142.
 titration of, with barium hydroxide, A., 451.
 determination of, in leather, B., 265.
 in presence of salicylic and hydrochloric acids, A., 1438.
 determination of volatile organic acids in solutions of, B., 391.
Sulphates, production of, (P.), B., 757.
 reduction of, by molecular hydrogen, A., 525.
 purgative action of, A., 1188.
 determination of, conductometrically, A., 699.
 nephelometrically, as barium sulphate, A., 586.
 volumetrically, A., 185, 1384.
 by the benzidine method, A., 586.
 in boiler-feed water, B., 909.
 in chrome liquors, B., 587.
 in presence of chromium salts, A., 925.
 in serum, A., 111.
 in water, volumetrically, B., 180.
 soluble, determination of, volumetrically, A., 1384.
Persulphuric acid, determination of, volumetrically in presence of Caro's acid and hydrogen peroxide, A., 326.
Persulphates, oxidation of iodides by, A., 802.
 reaction between thiosulphates and, in dilute aqueous solution, A., 314.
 detection of, in flour, B., 779.
 determination of, volumetrically, A., 451.
Pyrosulphuric acid, action of, with pyridine, A., 921.
Pyrosulphuryl chloride, decomposition of, A., 1131.
Thiosulphuric acid, constitution of, A., 1140, 1216.

Sulphur :—

- Thiosulphates, reaction between persulphates and, in dilute aqueous solution, A., 314.
 reaction of bromopropionates with, A., 1132.
 solid, reactivity of, with iodine, A., 692.
 determination of, A., 700.
- Trithionates, preparation of, from sulphurous acid and thio-sulphate, A., 52.
- Tetrathionates, preparation of, from sulphurous acid and thiosulphate, A., 52.
- Sulphur organic compounds**, A., 964, 1419.
 attempted asymmetric synthesis of, A., 628.
 dipole moments of, A., 23.
 removal of, from gases and their determination, B., 1033.
 reaction of, with sodium in liquid ammonia, A., 334.
 soluble, colour reaction for, A., 1268.
- Sulphides**, Raman spectra of, A., 409, 998.
 oxidation of, by perbenzoic acid, A., 63.
 complex, with antimony trichloride, A., 1394.
 with silver nitrate, and their compounds with mercuric chloride, A., 1394.
- sym.*-Sulphides, preparation of, A., 1289.
- Sulphurous acid, esters, A., 462.
- Sulphur detection, determination, and separation :—**
 detection of, in steels, B., 680.
 determination of, with the turbidimeter, A., 451.
 in benzene, petrol, and benzene, B., 792.
 in bitumen, B., 327.
 in black powder, B., 864.
 in blood, A., 755, 1177.
 in insecticides and fungicides, B., 269.
 in iron and steel, A., 586; B., 762.
 in small samples of steel, B., 844.
 in alloy steel, B., 928.
 in cast iron and hematite, B., 928.
 in liquid fuels, B., 661.
 in oils and rubber, B., 487, 1108.
 in organic compounds, by means of calorimetric bomb, A., 1438.
 in pyrites, B., 537, 885.
 in rubber products and in artificial rubber, B., 643.
 in soils, B., 555.
 micro-colorimetrically, in sulphur compounds, A., 55.
 in sulphur monochloride, B., 488.
- separation of, from hydrogen sulphide and nitric oxide, A., 1381.
- α -Sulphur, etching of figures on, A., 413.
- Sulphur-nitrogen linking, organic, A., 1284, 1295.
- Sulphuric acid. See under Sulphur.
- Sulphurous acid. See under Sulphur.
- Sulphydryl compounds, oxidation-reduction potentials of, A., 687.
- Sumac oil, B., 767.
- Sun, spectra of, and of sun-spots, A., 991.
 origin of Fraunhofer lines in, A., 404.
 B-band in, A., 991.
- Sunflowers, production of silage from, B., 1070.
 pigment of, A., 402.
- Sunflower oil, formation of *iso*oleic acid in hydrogenation of, B., 210.
 from Southern Rhodesia, B., 31.
- Sunlight, tropical, photosynthesis in, A., 920.
- Superconductivity, A., 410, 1360.
 of alloys, A., 673.
- Superconductors, transition curve of, A., 792.
- Superphosphates, manufacture of, (P.), B., 61.
 from Khibinsk apatite, B., 392, 586.
 machines for handling, (P.), B., 440.
 water-soluble phosphoric acid content of, B., 18, 1009.
 composition of citrate-insoluble residue from, B., 199.
 decomposition of calcium phosphate in solutions of, B., 438.
 comparison of precipitated phosphate and, B., 1111.
 mixture of kieselguhr and, B., 1091.
 ammoniation of, B., 199.
 with anhydrous ammonia, B., 674.
- action of, on germination, B., 39.
 on acid mineral soils, B., 898.
 on early cabbage, B., 557.
- ammoniated, B., 756, 880.
 availability of phosphoric acid in, B., 857.

- Suprarenal glands, formation of adrenaline in, A., 1193.
 preparation of therapeutic substance from, (P.), B., 366.
 of ox, cholesterol in, A., 507.
- Surfaces, structure of, by reflexion of electrons, A., 140.
 activity of, A., 176.
 adsorption on, A., 421, 1226.
 polishing of, A., 416.
- Surface energy, molecular theory of, A., 559.
 mechanical properties of, A., 301.
 transformations of, A., 1033.
 of liquids, A., 1114.
- Surface tension, measurement of, A., 896, 1007, 1228, 1366.
 by drop method, A., 162.
 calculation of, from capillary rise, A., 788.
 in a magnetic field, A., 287.
 thermodynamics of, A., 559, 1228.
 variation of, with thickness of glass plate, A., 1007.
 relation between phase boundary potential, adsorption, particle size, and, A., 300.
 of liquids, apparatus for measurement of, A., 190.
 of saturated vapours, A., 896.
 of solutions containing two surface-active solutes, A., 162.
- Surgical dressings, (P.), B., 654.
- Sweat, A., 863.
- Swedes, "many-necked" condition of, in relation to varietal and manurial trials, B., 1023.
- Sweet substances, effect of, on biocatalysis and metabolism, A., 1331.
- Swelling, A., 1232; B., 1109.
- Swelling pressure, A., 38.
- Swimming pools, ammonia-chlorine treatment of, B., 419.
- Swine, growth studies with, A., 648.
- Switches, mercury, (P.), B., 934.
 double-pole, double-throw, A., 58.
- Switch oils, production of, B., 429.
 ageing of, B., 749.
- Syenites of Kassa Is., A., 930.
 felspathic, A., 1146.
 sodalitic, from French Guinea, A., 332.
- iso*Sylvic acid, preparation of, A., 94.
- Sylvine, tensile strength of, after water treatment, A., 791.
 separation of constituents of, as carbonates, A., 320.
 scattering of X-rays by, A., 1205.
 containing thallium chloride, decay of phosphorescence in, A., 284.
- Sylvinite, production of potassium and sodium salts from, (P.), B., 757.
- Sylvite, enantiomorphous hemihedry of, A., 552.
- Symbols, system of, A., 548, 1000.
- "Sympatol," pharmacology of, A., 120.
- Synchysite, crystal structure of, A., 1218.
- Syndrome, Fröhlich's, phosphate and chloride excretion of, A., 114.
- Syngenite, production of, B., 970.
- Synthalin, action of, on cell oxidation, A., 517.
 effect of, on cellular fixation of dextrose, A., 397.
- Synthesis, biochemical, A., 1266.
 electro-, peroxide theory of, A., 193.
- Syphilis, curative properties of elements in, A., 1181.
 curative action of gallium in, A., 865.
 precipitation test for, A., 865.
- Syringic anhydride, A., 1424.
- Syrups, kieselguhr for clarification of, B., 270.
 determination of purity of, B., 561.
 determination of potassium guaiacolsulphonate in, B., 44.
- Systems**, capillary. See under Capillary.
 complex, quantum mechanics of, A., 544.
 conjugated, A., 349, 719, 1148.
 reactivity of, A., 235, 964, 1427.
 dicyclic, A., 728.
 difform, A., 906.
 disperse, nomenclature of, A., 302.
 dielectric relations of, A., 1123.
 capillary rise in, A., 679.
 stabilisation of, by surface-active substances, A., 34.
 heterogeneous, A., 1224.
 multi-component, graphic representation of, A., 568.
 non-metallic, equilibria in, A., 1235.
 one-component, A., 169.
 symmetrical, triad, prototropic, A., 834.
 ternary, A., 568.

T.

- T-gas. See Ethylene oxide.
- Tables, for reducing Fabry-Perot observations, A., 1387.
- Table salt, production of, (P.), B., 20.
- Tableware, semi-vitreous, brown stains on, B., 63.
- "Tabula Chemica," Arabic source of, A., 929.
- Taiwania cryptomerioides*, essential oil from, B., 698.
- Taiwanol, and its urethane, B., 698.
- Taka-diaxase, evaluation of preparations of, B., 314.
- Talal. See Galactal.
- Talc, formation of, A., 331.
- Talking-machines, production of records for, (P.), B., 171.
- Tall oil, sulphonic acid derivatives from esters and amides of, and their use in the textile industry, (P.), B., 334.
- Tallöl, extraction of lignoceric acid and lignoceryl alcohol from, A., 1272.
- Tallow, beef, glycerides of, A., 1178.
green, decolorisation of, B., 816.
- Tanks, horizontal, chart for, B., 421.
- Tank blocks, corrosion of, by opal glass, B., 248.
- Tannase, action of, on gallotannin, A., 983.
- Tanneries, waste from, B., 131.
treatment of, B., 516.
- Tannic acid, compounds of, with bismuth oxyiodide, B., 780.
action of tartrates on, A., 1174.
determination of, A., 752.
- Tannins, A., 96.
in flowers, A., 131.
mutual solubility of iodine and, in water, B., 862.
antioxygenic activities of, A., 1458.
decomposition of, by micro-organisms, A., 1094.
use of, in precipitation of proteins, A., 1317.
in brewing, B., 1024.
barley husk, A., 777.
carboxylic, A., 131.
pyrocatechol, determination of, B., 1021.
quebracho, sulphiting of, B., 772.
tea, and its heptamethyl derivative, A., 627.
vegetable, fixation of, in leather, B., 986.
precipitation of, by hexamethylene tetramine, B., 986.
analysis of, B., 938.
qualitative analysis of, B., 310.
quantitative analysis of, B., 130, 1021.
filtration of solutions of, for determination of insoluble matter, B., 772.
- Tannin extracts, furfuraldehyde number of, B., 986.
heavy metals in, B., 939.
vegetable, evaluation of, B., 732.
non-tans in, B., 1109.
sampling of, B., 986.
detection of sulphiting in, B., 820, 1064.
- Tanning, (P.), B., 1022.
apparatus for, (P.), B., 132.
ultra-violet rays in, B., 173.
with *Cæsalpinia tinctoria*, B., 939.
with *Carpinus duinensis* and *Rhus cotinus* extracts, B., 36.
with nepheline, B., 854.
of chamois or buckskin leather, (P.), B., 310.
chrome, B., 1064.
one-bath, basicity of liquors in, B., 359.
rapid, B., 310, 408.
vegetable, B., 359.
 p_H of pelts in, B., 408.
- Tanning agents, (P.), B., 645; 1149.
containing titanium, (P.), B., 645.
- Tanning effluents, effect of gases on nitrogen distribution in, B., 420.
- Tanning extracts, sediment in, B., 310.
determination of p_H of, B., 130.
determination of copper in, B., 505.
determination of insoluble matter in, B., 213.
determination of moisture in, B., 266.
- Tanning liquors, acidity of, B., 820.
formation of gases in, B., 939.
biochemistry of fermentation of, B., 688.
determination and control of buffer index of, B., 408.
chrome, B., 1064.
composition of, B., 1064.
- Tanning liquors, lime, determination of amines in, B., 938.
spent, treatment of, (P.), B., 772.
vegetable, iron and copper in, and their deposition during tanning, B., 732.
- Tanning materials, production of, (P.), B., 79, 1149.
from lignite, etc., (P.), B., 505.
from sulphite-cellulose waste-liquors, (P.), B., 131.
Rumanian spruce barks as, B., 772.
action of, on metals, B., 854.
action of oxygen on, B., 130.
artificial, production of, B., 266.
raw, extraction of, for analysis, B., 938.
tropical, B., 772.
vegetable, of Erythrea, B., 688.
sampling of, B., 986.
preparation of sheepskin skivers for tests on, B., 265.
fluorescence test for, B., 36.
analysis of, B., 820.
determination of fatty materials in, B., 820.
- Tantalum, preparation of, by electrolysis of its fused salts, B., 722.
production of, (P.), B., 1103.
M-series absorption spectrum of, A., 1345.
L X-ray spectrum of, A., 3.
- Tantalum carbide, properties of filaments of, B., 206.
hydride, crystal structure of, A., 413.
oxide, electrolytic valve action of, A., 546.
pentoxide, reactions of, with alkaline-earth carbonates and metallic oxides, A., 447.
- Tantalum determination and separation :—
analysis of, A., 57, 814
separation of, electrolytically, from niobium, A., 1018.
- Tape, adhesive. See Adhesive tape.
- Tapioca, kiln for steam-cooking of, (P.), B., 88.
digestibility and fodder value of, B., 695.
composition and feeding value of roots of, B., 87.
- Tapioca flour, nutritive value of, for pigs, B., 643.
- Tar, purification of, (P.), B., 528.
refining of, (P.), B., 577.
removal of solid particles from, (P.), B., 288.
separators for, (P.), B., 10, 577.
treatment of, (P.), B., 145.
apparatus for heating of, (P.), B., 872, 1037.
cracking of, (P.), B., 750.
distillation of, (P.), B., 10, 234, 474*, 619, 663, 749, 872, 960, 1001, 1130.
distillation of mixtures of coal and, (P.), B., 1129.
fractionation of, (P.), B., 145.
hydrogenation of, (P.), B., 794.
destructive hydrogenation of, (P.), B., 431, 709.
corrosion of stills for, B., 706.
index for, in presence of copper, B., 373.
removal of, by electrostatic precipitation, B., 429.
cleaning composition for, (P.), B., 289.
production of liquid hydrocarbons from, B., 956.
pyridine bases from, A., 630.
brown-coal, aromatic substances in, B., 1128.
phenols of, B., 100.
hydrogenation of benzene from cracking of, B., 1128.
- coal, nature and properties of, B., 574.
distillation of, (P.), B., 528.
removal of phenol from distillery water from, B., 996.
thermal decomposition of constituents of, B., 467.
berginisation of, B., 282.
blending of, for road-making, B., 7.
phenol content of, B., 574.
phenols of, A., 1286.
bituminous, free carbon of, B., 7.
Saar, phenols in, B., 707.
determination of hydrocarbons in neutral oil from, B., 870.
gas, dehydration and de-oiling of, B., 326.
lignite, constituents of, B., 706.
aromatic and hydroaromatic compounds of, B., 828.
- low-temperature, B., 574.
thermal decomposition of constituents of, B., 956.
catalytic desulphurisation and hydrogenation of, B., 956.
hydrogenation of neutral and phenolic oil in, B., 100.
wax from, B., 374.
peat, cracking and destructive hydrogenation of, B., 283.
primary, extraction of bases from aqueous distillate of, B., 100.
desulphurisation and catalytic hydrogenation of, B., 467.

- Tar, primary, hydrogenation of nitrogen compounds of, B., 1033.
road, (P.), B., 192.
treatment of, (P.), B., 914.
water-gas, treatment of, B., 324.
light oil from, B., 707.
- Tar acids, removal of, from oils, (P.), B., 528.
- Tar oils, working-up of sulphuric acid from washing of, (P.), B., 332.
fractionation of, (P.), B., 145.
extraction of phenols from, (P.), B., 288.
suitability of, for impregnation of mine timber, B., 590.
from low-temperature distillation of carbonaceous materials, (P.), B., 331.
from Rumanian lignite, composition of, and determination of hydrocarbons therein, B., 707.
brown coal, refining of, (P.), B., 384.
removal of sulphur from, B., 326.
coal, for internal-combustion engines, B., 828.
lignite, ketones in, B., 706.
pine, conversion of, into heavier oils, (P.), B., 818.
- Tara. See *Cesalpinia tinctoria*.
- Tarakogenos kurzii, chaulmoogra oils from, B., 552.
- Taraxanthin, A., 1299.
- Tarbutite, A., 1390.
- Tarnowitzite, A., 594.
- Tartar emetic, constitution of, A., 936.
determination of lead in, A., 588.
- Tartaric acid, ultra-violet absorption of solutions of, A., 19, 302.
absorption of aqueous solutions of, A., 423.
freezing of mixtures of antipodes of, A., 676.
inversion of sucrose by, A., 1242.
active, anomalous dispersion of, A., 895.
salts, metabolism of. See under Metabolism.
salts and esters, cryoscopy and rotation of, in molten calcium chloride, A., 35.
alkali bismuth salts, toxicity and action of, B., 675.
bismuth salts, A., 823, 1148.
complex cerium salts of, A., 182.
copper salts, absorption spectra of, A., 1110.
complex iron salts, A., 823.
manganese salts, and their oxidation, A., 823.
manganosomanganic salt, A., 823.
p-nitro- α -phenyl- and α -phenyl-ethylammonium antimonyl salts, A., 936.
potassium sodium salt, dielectric properties of, A., 286.
methyl ester, dipole moment of polymorphic forms of, A., 1113.
methyl hydrogen ester, decomposition of, by pectase, A., 392.
detection of, in presence of citric acid, by photocatalysis, A., 504.
determination of, colorimetrically, A., 1450.
- anti-Tartaric acid, asymmetry of, A., 713.
- meso-Tartaric acid, asymmetry of, A., 465.
- Tartaric acids, structure of, A., 822.
- Tartrazine dyes, yellow, manufacture of, (P.), B., 337.
- Tasmanin, A., 536.
- Taste, inherited deficiency of, A., 1186.
- Taurocholic acid, sodium salt, effect of salts on surface tension of solutions of, A., 679.
action of, on lipase, A., 984.
- Taurolithocholic acid, formation of, from chicken bile, A., 733.
- Tautomerism, mobile-anion, A., 724.
three-carbon, A., 934, 1042, 1274.
catalysis in, A., 438.
valency, in unsaturated systems, A., 92.
- Taxine, A., 1171.
- Tarus baccata*. See Yew.
- Tea, treatment of, (P.), B., 782, 992.
with humidified air, (P.), B., 945.
drying of, (P.), B., 866.
drying apparatus for, (P.), B., 742, 997.
extraction of aroma of, (P.), B., 88.
green, tannin from, and its heptamethyl derivative, A., 627.
Japanese, vitamin-C in, A., 1338.
maté, physiological action and taste of, B., 414.
determination of caffeine in, B., 609.
- Tea leaves, green, withered, treatment of, (P.), B., 318.
- Tea seed oil, A., 1341.
- Tectites of Indo-China, A., 60, 1028.
of the Philippines, A., 1146.
- Teeth, X-ray analysis of, A., 508.
effect of lack of vitamins on, A., 1465.
acid pastes for cleaning of, (P.), B., 656.
- cycloTelluributane, derivatives of, A., 373.
- Tellurium, atomic weight and isotopes of, A., 1208.
variable valency of, A., 547.
resonance spectrum of, A., 1204, 1344.
spark spectrum and ionisation potentials of, A., 1204.
fused, solubility of carbon dioxide in, A., 419.
- Tellurium dioxide, reactions of, with halogen acids, A., 923.
- Tellurium detection and determination:—
detection of, in bismuth, B., 161.
determination of, and its separation from selenium, A., 186.
- Tellurium ores, A., 191.
- cycloTellurobutane, and its salts, A., 373.
- Telluroketones, preparation of, A., 605.
- Temperature, determination of, from band spectra, A., 779.
by chemical thermoscope, (P.), B., 522.
determination of fixed points on scale of, A., 1004.
vacuum tube control of, A., 815.
controllers of, A., 705.
regulator for, (P.), B., 518.
electrical, (P.), B., 69.
organic compounds as standards for, A., 417.
of flowing reaction mixtures, regulation of, (P.), B., 139.
absolute scale for, A., 553.
absolute, zero, principle of inaccessibility of, A., 31.
high, aluminothermic process for generation of, (P.), B., 119.
behaviour of materials at, B., 949.
comparison of scales for, A., 1361.
surface, measurement of, A., 190.
- Tenebrio molitor* (meal worm), biology of, A., 115, 642.
- Tenebrioglycol, A., 642.
- Tephrosin, A., 357, 491, 1298.
toxicity of, A., 870.
- Tephrosindicarboxylic acid, A., 491.
- Terbium, spectra of, A., 780.
furnace spectrum of, A., 7.
- Terebenthene from pines, B., 212.
- 2:2'-Terephthalylidenebis-1:3-diketohydrindene, A., 355.
- Termite, control of, B., 1068.
- Thermobacterium mobile*, B., 776.
- Ternary systems, liquid-vapour chart for, B., 465.
- Terpenes, A., 358, 1300.
constitution and disinfecting properties of, A., 267.
action of hydroferrocyanic acid on, A., 736.
sulphur compounds of, A., 95.
monocyclic, action of Beckmann's mixture on, A., 357.
turpentine, hydration of, to terpin hydrate, A., 961.
- Terpene compounds, extraction of, from waste pine wood, B., 450.
action of Japanese clay on, A., 735.
higher, A., 231, 359, 360, 734, 736, 737, 1301, 1302.
- Terpin hydrate, structure of, A., 848.
formation of, from turpentine terpenes, A., 961.
- α -Terpineol, oxonium salt of, A., 736.
- γ -Terpinene dioxide, A., 735.
- Terpinol, manufacture of, from Russian turpentines, B., 259.
- Terpinolene, action of Beckmann's mixture on, and its tetra-bromides, A., 357.
- Test-tubes, A., 59.
- Testicles, enhancement of infection by extracts of, A., 382.
cock's, fatty substance in interstitial cells of, A., 642.
- Testing machines, accuracy of, B., 949.
- Tetanus, toxin of, and its anatoxin, A., 1460.
induction of, in rachitic rats, A., 759.
acid-base equilibrium of blood in, A., 1181.
diffusible calcium of blood in, A., 760.
relation between hypocalcemia and, A., 879.
metabolism in, A., 979.
liver-arginase and guanidine metabolism in, A., 1325.
insoluble precipitates in immunisation from, A., 267.
parathyroid, calcium and phosphorus in serum in, A., 1084.
- Tetra-acetoxylbenzene, 2:5-diamino-, diacetyl derivative, A., 478.
- 2:2':3:3'-Tetra-acetoxy-9:9'-dianthranyl diacetate, A., 356.
- Tetra-acetylscutellin glucoside, A., 738.
- β -2:3:4:6-Tetra-acetyl-1-benzoylglucothiose, A., 939.
- Tetra-acetyl- α -bromopropionyl- d -glucosamine, A., 830.
- Tetra-acetyl- α -chloroacetyl- d -glucosamine, A., 830.
- ω -O-Tetra-acetyl- β -galactosidoxyl-4-acetoxy-3-methoxyacetophenone, A., 1425.

- ω -O-Tetra-acetyl- β -galactosidoxo-3:4-diacetoxyacetophenone, A., 1425.
 Tetra-acetylgluconose, A., 1275.
 Tetra-acetyl- d -glucosamine, and its hydrochloride, A., 830.
 Tetra-acetyl- β - d -glucosidoferulic acid, methyl ester, A., 201.
 4-Tetra-acetylglucosidoxoacetophenone, ω -hydroxy-, A., 1424.
 ω -O-Tetra-acetyl- β -glucosidoxo-4-acetoxy-3:5-dimethoxyacetophenone, A., 1424.
 ω -O-Tetra-acetyl- β -glucosidoxo-4-acetoxy-3-methoxyacetophenone, A., 1425.
 5-O-Tetra-acetyl- β -glucosidoxo-4'-acetoxy-7':3':5'-trimethoxyflavylium ohloride, A., 1425.
 ω -O-Tetra-acetyl- β -glucosidoxo-3:4-diacetoxyacetophenone, A., 1423.
 3-O-Tetra-acetyl- β -glucosidoxoindole-2-carboxylic acid, 6-bromo-, methyl ester, A., 468.
 4- β -Tetra-acetylglucosidyl-2-O-methylphloroglucinaldehyde, A., 1424.
 2:3:4:6-Tetra-acetylmannose, A., 337.
 β -Tetra-acetylisorhamnose, A., 1276.
 Tetra-acetylribose, A., 938.
 Tetra-amylose, A., 1276, 1277.
 Tetraabenzylethylene, photochemistry of, A., 1295.
 Tetra-2-benzylthiazolyl tetrasulphide, A., 1170.
 2:2:4:6-Tetrautoxy-5:5-diethylidihydropyrimidine, A., 1074.
 n -Tetracontane, A., 193.
 Δ -Tetracosenoic acids. See Erucylacetic acids.
 Tetracosic acid, isolation of, from peanut oil, A., 822.
 2:2:4:6-Tetraethoxy-5:5-diethylidihydropyrimidine, A., 1074.
 Tetraethyl hypophosphate and pyrophosphate, A., 820.
 Tetraethylidiaminodiphenylmethane, A., 96.
 Tetraethylammonium iodide, adsorption of, by carbon, A., 678.
 salts, conductivity of, in methyl alcohol, A., 1129.
 Tetraethylidihydropyrazine, and its chloroplatinate, A., 933.
 Tetraethyl- β -methoxytrimethylenediamine, and its salts, A., 1042.
 Tetraacyclohexyl orthosilicate, A., 1021.
 Tetrahydroacridine, *ms*-chloro-, A., 495.
 Tetrahydroacridone, A., 495.
 Tetrahydroagathene, dihydroxy-, A., 359.
 Tetrahydroalantolactone, A., 734.
 Tetrahydroalantolic acid, methyl ester, A., 734.
 Tetrahydroanacardic acid, A., 840.
 5:8:7:8-Tetrahydroanthraquinol, 2-amino- and 1-hydroxy-, salts of, A., 845.
 5:8:7:8-Tetrahydroanthraquinone, 2-amino- and hydroxy-, and their derivatives, A., 845.
 1:4-dihydroxy-, A., 1063.
 Tetrahydroberberrubine, resolution of, A., 242.
 Tetrahydrobrucine, oxidation products of, and their derivatives, A., 1312.
 Tetrahydrocarbazolenine, 6-nitro-11-hydroxy-, A., 1166.
 d -Tetrahydrocoptisine, A., 855.
 β -Tetrahydrodeoxycodine, identity of dihydrothebaccodine and, A., 635.
 Tetrahydrofluoranthenes, 4-amino-, and 4-hydroxy-, A., 1044.
 Tetrahydrofurfuryl alcohol, manufacture of, (P.), B., 149.
 Tetrahydroguaiene, A., 1302.
 ar -5:6:7:8-Tetrahydrodromethylnaphthalenes, dibromo-, A., 1281.
 Tetrahydro- α - β -naphthacarbazoles, and their derivatives, A., 1166.
 ar -Tetrahydro- β -naphthaldehyde, manufacture of, (P.), B., 1086.
 1:2:3:4-Tetrahydro-2-naphthyl sulphite, A., 819.
 1:4:6:7-Tetrahydro-2-naphthyl acetate, 1:1:3:4:6:7-hexabromo-, A., 216.
 Tetrahydro- β -naphthylamine, hyperglycemia and hyperthermia with, A., 651.
 β -Tetrahydronaphthyl ethyl ketone semicarbazone, A., 208.
 Tetrahydro-1:8-naphthyridine, and its derivatives, A., 1309.
 Tetrahydropalmitine, resolution of, and its hydrogen tartrates, A., 242.
 Tetrahydropentindole-8-carboxylic acid, 5-chloro-10-nitro-9-hydroxy- and 5:10-dinitro-9-hydroxy-, ethyl esters, A., 1166.
 Tetrahydrophenol, from pelandjaic acid, A., 88.
 3:6-*endo*-Tetrahydrophthalic acids, and their derivatives, A., 1426.
 Tetrahydropyran, 4-cyano-, A., 96.
 Tetrahydropyran-4-carboxylic acid, and 4-cyano-synthesis of, and their derivatives, A., 96.
 Tetrahydroquinoline, formation of triphenylmethane dyes from, A., 632.
 5:8:7:8-Tetrahydroisoquinoline, 1:3-dihydroxy-, A., 1165.
 1:2:3:4-Tetrahydroquinolines, substituted, stereoisomerism in, A., 97.
 1:2:3:4-Tetrahydroquinoxaline, 2:3-dicyano-, and its diacetyl derivative, A., 366.
 α -Tetrahydrosantonin, chloro-, A., 490.
trans-Tetrahydroselenophen-2:5-dicarboxylic acids, and their salts, A., 971.
 Tetrahydroshobakunine, and its salts, A., 242.
 Tetrahydrostrychnine, oxidation products of, and their derivatives, A., 242, 1312.
 Tetrahydrotellurophen. See *cyclo*Tellurobutane.
 Tetrahydroxylindeic acid, salts and derivatives of, A., 227.
 Tetraakis-azo-dyes, black, manufacture of, (P.), B., 920.
 Tetralin, removal of naphthalene from town-gas by, B., 466.
 Tetralin series, bases in, A., 214.
 2:3:6:7-Tetramethoxyanthraquinone, and its tetra-acetyl derivative, A., 226, 954.
 2:3:6:7-Tetramethoxy- α -anthrone, A., 226.
 2:4:3':4'-Tetramethoxybenzophenone, A., 1069.
 4:5:3':4'-Tetramethoxy-2-benzoylbenzoic acid, A., 226, 954.
 4:5:3':4'-Tetramethoxy-2-benzylbenzoic acid, A., 226.
 Tetramethoxydianthrones, and their diacetyl derivatives, A., 356.
 2:2':4:4'-Tetramethoxydiphenyl, 5:5'-dinitro-, A., 947.
 2:4:3':4'-Tetramethoxy- β -diphenylacrylic acid, A., 1069.
 2:4:3':4'-Tetramethoxy- β -diphenylpropionic acid, A., 1069.
 2:3:6:7-Tetramethoxy-9-ethylanthranol, A., 954.
 2:2':3:3'-Tetramethoxyhelianthrone, A., 356.
 Tetramethoxy- N -methylidihydro- α -naphthaphenanthridine, A., 1311.
 2:2':3:3'-Tetramethoxynaphthadanthrone, A., 356.
 α -Tetramethylidiaminobutane picrate, A., 204.
 4:4'-Tetramethylidiamino-1:1'-dinaphthylcarbinol, A., 350.
 Tetramethylidiaminodiphenylmethane as reagent in analysis, A., 1383, 1386.
 α -Tetramethylidiaminohexane, salts of, A., 204.
 α -Tetramethylidiaminopentamethinium perchlorate, A., 75.
 2:3:6:7-Tetramethylantracene, synthesis of, A., 1282.
 2:3:6:7-Tetramethylantraquinone, synthesis of, A., 1282.
 1:2:3:5-Tetramethylbenzene, preparation of, A., 833.
 Tetramethylbis-5:5'-sinomenol, A., 970.
 $\alpha\beta\delta$ -Tetramethyl- Δ -butadiene, dimeride of, A., 819.
 $\alpha\gamma\gamma$ -Tetramethylbutyl- α -cresol, A., 346.
 Tetramethylcarboxylic acid porphin, A., 967.
 Tetramethyldicarboxylic acid porphin, A., 967.
 1:3:5:8-Tetramethyl-2:4-diethyl-6-acetoxyethylporphin-7-propionic acid, haemin of and its derivatives, A., 745.
 1:3:5:8-Tetramethyl-2:4-diethylporphin-7-propionic-6-methylmalonic acid, methyl ester, A., 745.
 Tetramethyldiethylpyrrochloromethenes, A., 1168.
 2:3:6:7-Tetramethyl-9:10-dihydroanthracene, A., 1282.
 2:2:5:5-Tetramethyldihydropyrazine chloroplatinate, A., 933.
 3:5:3':5'-Tetramethyldiphenyl, 2:2'-difluoro-6:6'-diamino-, and its d -camphorsulphonates, and 2:2'-difluoro-4:6:4':6'-tetraamino-, 6:6'-dinitro-, and 4:6:4':6'-tetranitro-, A., 720.
 Tetramethyldiphenyl-1:6:1':6'-sulphonylides, and their derivatives, A., 83.
 Tetramethyldipropylpyrromethenes, and their salts, A., 746.
 2:2':5:5'-Tetramethyldipyrazine, A., 100.
 2:5:2':5'-Tetramethyl-1:1'-dipyrrolyl-3:3'-dicarboxylic acid, A., 1074.
 Tetramethylene dibromide, use of, in synthetical formation of closed carbon chains, A., 621.
 Tetramethylene- α -biscyclo-telluributane 1:1'-dibromide, A., 373.
 2:3-Tetramethylene-1:2:3:4-tetrahydroisoquinoline, A., 1072.
 1:3:5:8-Tetramethyl-4-ethyl-2-acetyl-6:7-dicarboxyethylporphin, and its salts and methyl ester, A., 967.
 1:3:5:8-Tetramethylethyl-6:7-dicarboxyethylporphins, and 4-bromo-, and their salts and derivatives, A., 967.
 4:5:3':5'-Tetramethyl-4'-ethylpyrromethene salts, A., 967.
 Tetramethylethylpyrromethenes, hydrobromides of, A., 102.
 O-Tetramethyleuxanthic acid, methyl ester, A., 1040.
 Tetramethylfurans, and *di*- and *tetra*-nitro-, A., 627.
 dl -Tetramethylfructopyranose, A., 825.
 dl -Tetramethylfructose, A., 826.
 Tetramethyl- γ -fructoses, A., 827.
 Tetramethylgalactonamides, A., 1403.
 Tetramethylgluconamides, A., 1403.
 $aaa\beta$ -Tetramethylglutaconic acid, and its silver salt, A., 957.
 $aaa\beta$ -Tetramethylglutaric acid, and β -hydroxy-, ethyl ester, A., 957.
 Tetramethylglyphoric acid, methyl ester, A., 222.

- Tetramethylmethylfructoside, A., 826.
 Tetramethyl- β -methylmannopyranoside, A., 200.
 2:3:6:7-Tetramethyl- $\Delta^{2,6}$ -octahydroanthraquinones, A., 1282.
 1:4:6:8-Tetramethylphthalophenone, 3:6-dihydroxy-, A., 627.
 2:3:5:6-Tetramethylpiperazines, stereoisomeric, and their derivatives, A., 851.
d- β -2:3:5:6-Tetramethylpiperazinebis-*d*-methylenecamphor, A., 851.
 1:3:5:7-Tetramethylporphin, and its copper salt, A., 967.
 1:3:5:8-Tetramethylporphin-2:4-di(methylmalonic)-6:7-dipropionic acid, iron salt and esters of, A., 103.
 3:3':5':5'-Tetramethylpyrrochloromethene, and its derivatives, A., 1168.
 2:2:5:5-Tetramethylpyrrolidine-3-carboxylic acid, diethylamide of, A., 740.
 3:5:4':5'-Tetramethylpyrromethene-4:3'-dipropionic acid, derivatives of, A., 240.
 Tetramethyl-tea-catechin galloate trimethyl ether, A., 628.
 1:4:5:8-Tetramethyl-2:3:6:7-tetra-acetylaminoporphin, A., 368.
 Tetramethyltetrapropylporphins, synthesis of, and their derivatives, A., 746.
 Tetramethylthiuram hexasulphide, A., 1151.
 Tetramethylureidine, Fischer's, attempted preparation of, A., 1308.
 1:3:8:9-Tetramethylisoxanthine, A., 744.
S-Tetraphenylacetone, sodium derivative, A., 208.
aa $\delta\delta$ -Tetraphenylbutanol, A., 474.
aa $\delta\delta$ -Tetraphenyl- Δ -butene, A., 474.
s-Tetraphenyldi-*o*-*tert*-butylpropionylethane, A., 194.
 1:2:4:5-Tetraphenyl-1:4-dihydrobenzene, 3:6-dichloro-1:4-dihydroxy-, A., 1062.
 1:2:3:4-Tetraphenyl-1:4-dihydronaphthalene, 1:4-dihydroxy-, A., 1062.
 Tetraphenyldipyrrole, derivatives of, A., 234.
 Tetraphenyldistibine, A., 637.
 Tetraphenylethylene, reaction of, with magnesium phenyl chloride, A., 473.
 Tetraphenylmethane derivatives, A., 840.
 2:3:4:5-Tetraphenyl- $\Delta^{2,4}$ -cyclopentadien-1-ol, A., 91.
 2:3:4:5-Tetraphenyl- $\Delta^{2,4}$ -cyclopentadien-1-one, preparation of, and its dibromide, A., 91.
BB $\delta\delta$ -Tetraphenylpentan-*y*-one-*ac*-dial, A., 955.
 2:3:4:5-Tetraphenyl- Δ^4 -cyclopenten-1-one, A., 91.
aa β γ -Tetraphenylpropan- β -ol, A., 948.
aa β γ -Tetraphenylpropenes, and their bromo-derivatives, A., 948.
a β β β -Tetraphenylpropionic acid, esters of, A., 956.
 2:3:5:6-Tetraphenylpyridine, reduction of, A., 1431.
 Tetraphenylstibyl salts, A., 637.
 Tetraphenylsuccinic acid, derivatives of, A., 956.
 Tetraphenyldithiopyrrole, derivatives of, A., 234.
 Tetraphenyl-*o*-xylene, A., 1406.
 Tetraphenyl-*o*-xylene glycol, and its derivatives, A., 1405.
 Tetratetraphenylmethane, *tetra-p*-amino-, and its derivatives, A., 840.
 Tetrahiolotetrazole, A., 1254.
 Tetratolylbutinenediol, oxidation of, A., 95.
 2:2':5:5'-Tetratolyl-3:4-diketotetrahydrofuran, A., 95.
 Tetra-*p*-tolylthiolbenzoquinone, A., 1289.
 Tetra-*p*-tolylthiol-3-methylmethane-5-carboxylic acid, *tetra-p*-hydroxy-, A., 840.
 Tetrazoles, production of, (P.), B., 918.
 disubstituted, preparation of, (P.), B., 965.
 Tetryl, preparation of, A., 211.
 purification of, (P.), B., 180.
 Textiles, manufacture of, containing artificial and natural silk, (P.), B., 341.
 oils for, (P.), B., 1002.
 preparations for wetting of, (P.), B., 716.
 apparatus for wet treatment of, (P.), B., 755.
 drying and carbonising machines for, (P.), B., 755.
 removal of grease from, (P.), B., 838.
 weighting of, (P.), B., 197, 1008.
 porosity of, B., 152, 798, 1042.
 preparations for treatment of, (P.), B., 1090.
 softening treatment for, (P.), B., 347.
 ozonising treatment of, (P.), B., 197.
 bleaching of. See under Bleaching.
 dyeing of. See under Dyeing.
 sizing of, (P.), B., 1008.
 desizing of, B., 1007.
 Textiles, waterproofing of, (P.), B., 1047, 1090.
 soaps for, B., 1060.
 agents for protection of, against mildew, etc., (P.), B., 801.
 solutions for impregnation of, (P.), B., 754.
 disinfection of, (P.), B., 1154.
 production of designs on, (P.), B., 346.
 apparatus for testing of, (P.), B., 291.
 packaging of strands of, (P.), B., 585.
 bleached, detection of active chlorine in, B., 583.
 determination of copper in, B., 196.
 Textile fabrics. See under Fabrics.
 Textile fibres. See under Fibres.
 Textile machinery, lubricants for, (P.), B., 873.
 Textile materials, manufacture of, (P.), B., 836, 1090.
 production and treatment of, (P.), B., 486.
 treatment of, (P.), B., 584, 801, 1046.
 in cake form, (P.), B., 482.
 apparatus for wet treatment of hanks of, (P.), B., 244.
 degreasing of, (P.), B., 674.
 preparations for conditioning of, (P.), B., 923.
 prevention of fading of, (P.), B., 801.
 sizing of, (P.), B., 535, 585, 674.
 sizing and finishing of, (P.), B., 755.
 creping of, (P.), B., 716, 880.
 waterproofing of, (P.), B., 923.
 manufacture of rubbered threads of, (P.), B., 535.
 cellulose, delustering of, (P.), B., 1008.
 crepe, (P.), B., 1090.
 dyed, light-fading and depth of shade of, B., 484, 1007.
 fire- and mildew-resistant, (P.), B., 585, 1046.
 waste, treatment of, (P.), B., 17*.
 Textile oils. See under Oils.
 Textile yarns. See under Yarns.
 Thalleioquinine reaction, A., 639.
 Thallium, atomic weight of, A., 141, 1348.
 isotopes of, A., 888, 1349.
 spectrum of, A., 780, 1204, 1345.
 isotope effect in, A., 664.
 Zeeman effect in, A., 137.
 absorption spectrum of, A., 888.
 arc spectrum of, A., 541, 1204.
 molecular spectrum of, A., 664, 888.
 electrical resistance of, A., 674.
 specific heat of, A., 293.
 vapour, absorption spectra of mixtures of inert gases with, A., 541.
 absorption coefficient of slow electrons in, A., 542.
 temperature radiation of, A., 1104.
 crystal structure of, A., 288.
 solution of, in acids, A., 1243.
 ionised, structure of, A., 993, 1204.
 spectrum of, A., 8.
 Thallium alloys with lead, electrodeposition of, B., 162.
 with mercury, free energy of formation of, A., 567.
 Thallium compounds, applications of, in organic chemistry, A., 1280.
 Thallium salts, pharmacology of, A., 870.
 Thallium chloride, double decomposition of silver sulphate and, A., 568.
 chloride and bromide, refractive indices of crystals of, A., 286.
 hydride, volatile, A., 1020.
 Thallous chloride, action of, with potassium thiocyanate, A., 1253.
 Thallous halides, spectroscopy of dissociation in solutions of, A., 565.
 iodate, solubility of, in aqueous salt solutions, A., 309.
 in ethyl alcohol-water mixtures, A., 419.
 calculation of activity coefficient from, A., 40.
 sulphate, double salts of praseodymium sulphate and, A., 1381.
 thioperrhenate, A., 924.
 Thallium organic compounds:—
 Thallium organic halides, preparation of, A., 971.
 tetra-acetylene, A., 1280.
 Thallium determination:—
 determination of, iodometrically, in presence of ferric iron, A., 328.
 iodometrically, in cadavers, A., 56.
 Thebaine, action of concentrated hydrochloric acid on, A., 1313.
 and its derivatives, effect of, on carbohydrate metabolism, A., 388.
 Thebainone, and its salts and oxime, A., 1313.
 Thebenan, A., 1172.

- l*-Thebenone, formation of, from sinomenine, and its derivatives, A., 501, 1172.
- Theelin, constitution of, and its methyl ether, A., 960.
- Theelol, A., 879, 1337.
crystallography of, A., 790.
- Theobromine, A., 853.
methylation of, B., 862.
detection of, A., 1169.
determination of, in its sodium salicylate compound, B., 862.
- Theobromine, 1-amino- and 1-hydroxy-derivatives, A., 239.
- Theophylline, methylation of, B., 862.
commercial sodium acetate compound of, B., 862.
detection of, A., 1169.
determination of, in its sodium acetate compound, B., 862.
- Theophylline, 8-chloro-, A., 101.
- Theophylline-*d*-glucosides, and its benzoate, A., 940.
- Therapeutic agents, manufacture of, (P.), B., 742, 743, 946, 1155.
- Thermal conductivity, measurement of, A., 1361; B., 657.
application of dimensional analysis to, A., 674.
of gases, A., 293, 417.
of gas mixtures, A., 32, 1117.
viscosity, and diffusion in gas mixtures, A., 418, 793.
of liquids, A., 156.
data, for organic compounds, A., 42.
- Thermionic devices, manufacture of cathodes for, (P.), B., 209.
valves. See under Valves.
- Thermocouples, A., 1143, 1361.
manufacture of, (P.), B., 499, 1079.
low temperature calibration of, A., 1026.
for measuring electric currents, (P.), B., 499.
with elements of iron and nickel, A., 1117.
copper-constantan, calibration of, A., 1143.
- Thermodynamic equilibrium, law of, A., 169.
- Thermodynamics, A., 899, 1368.
of mixtures, A., 307.
of supercooled phases, A., 417.
generalised, A., 1009.
- Thermo-elements, antimony-bismuth, production of, A., 458.
vacuum, preparation of, A., 1212.
- Thermometers, time lag of, A., 1026.
for cooking ovens, (P.), B., 135.
for gases, (P.), B., 912.
for precision calorimetry, A., 703.
Beckmann, calibration of, A., 1026.
resistance, A., 191.
application of, to ebullioscopy and tonometry, A., 928, 1004.
for measurement of changes of humidity or temperature, B., 981.
differential, A., 1201.
modified, A., 1386.
platinum, A., 59.
- Thermophosphates, production of, from apatite-nepheline rocks, B., 487.
- Thermopiles, radiation, A., 57.
- Thermoplastic materials, (P.), B., 853.
manufacture of, from fatty oils, (P.), B., 501.
production of aqueous dispersions of, (P.), B., 788.
manufacture of sheets, veneers, etc. from, (P.), B., 937, 1045.
decorating articles of, (P.), B., 1107.
- Thermoregulators, photo-electric, A., 1386.
toluene, A., 1143.
- Thermoscope, chemical, (P.), B., 522.
- Thermostats, A., 815, 1026, 1143; (P.), B., 2, 279, 1029.
stirring efficiency of, A., 1386.
electric immersion heater for, A., 703.
regulators for, A., 591.
for fermentation laboratories, B., 39.
for fuel burners, (P.), B., 1127.
for refrigerators, etc., (P.), B., 827.
automatic, for high-pressure organic reactions, B., 93.
laboratory, A., 457.
low-temperature, A., 1386.
cooling unit for, A., 815.
simple, with independent temperature control, A., 591.
- Thiachromanone series, A., 1163.
- Thiazines, substituted, synthesis of, A., 1311.
- Thiazinequinone dyes, printing with, (P.), B., 346.
- Thiazoles, A., 498.
manufacture of, (P.), B., 1133.
use of *s*-dichloroacetone in preparation of, A., 103.
- Thiazoles, complex metal derivatives of, (P.), B., 654.
halogenated amino-arylene derivatives of, (P.), B., 711.
manufacture of nitrophenyl derivatives of, (P.), B., 475.
- Thiazoleamines, containing the pyrocatechol group, synthesis of, A., 748.
- Thiazoleanthrone, manufacture of derivatives of, (P.), B., 797.
- Thiazoleanthrone dyes, vat, manufacture of, (P.), B., 669.
- Thiazolethionaphthen derivatives, A., 1075.
- Thickeners, aqueous, prevention of foaming in, B., 214.
- Thienanthrone dyes, vat, fast, manufacture of, (P.), B., 919.
- l*- α -Thienylglycollic acid, A., 1091.
- Thienylglyoxal, dismutation of, and its derivatives, A., 1091.
- 9-Thienylxanthen, A., 361.
- Thioamides, constitution of, A., 608.
formation of, from acylated aldehydecyanohydrins, A., 353.
- Thiocarbamide (*thiourea*), manufacture of, (P.), B., 12.
solubility of, in presence of antipyrine, A., 159.
intramolecular change between ammonium thiocyanate and, A., 572.
condensation products of, with formaldehyde and cuprous chloride, A., 1398.
complex metallic salts and arsenic derivative of, A., 831.
perchlorate, A., 339.
- o*-Thiocarbamidobenzoic acid, ring closure of, A., 634.
- Thiocarbanilide, prevention of crystallisation of supersaturated solutions of, (P.), B., 667.
- Thiocarbanilides, effect of substituents on formation of, A., 613.
- Thiocarbimides (*mustard oils*), action of, on oximes, A., 210, 842.
aromatic, A., 722.
- Thiocyanates, Raman spectra of, A., 146.
iodometric oxidation of, A., 1372.
decomposition of, in ultra-violet light, A., 48.
compounds of cellulose with, A., 306.
aromatic, A., 722.
complex, A., 182.
ammines of, A., 1380.
metallic, phase-rule studies on, A., 310.
solubilities of, A., 1119.
detection of, in presence of ferrocyanides, A., 326.
determination of, with step-photometer, A., 1257.
use of buffered ammonia in, iodometrically, A., 811.
in coke-oven liquors, B., 373.
- Thiocyanic acid, preparation of hydrogen cyanide by oxidation of, B., 586.
and its salts, bactericidal action of, A., 396.
ammonium salt, oxidation of, B., 586.
intramolecular change of thiocarbamide and, A., 572.
production of fertiliser from, (P.), B., 990.
ferric salt, structure of, A., 670.
mercury and potassium salts, equilibrium of water with, A., 684.
complex molybdenum salts, A., 183.
potassium salt, determination of, by oxalate method, B., 245.
complex rhodium salts of, A., 1141.
sodium salt, therapy of, A., 1088.
- Thiocyanogen, manufacture of salts of, (P.), B., 439.
- 1,3,4-Thiodiazine, 2-amino-5-hydroxy-, and its derivatives, A., 635.
- Thiodiazines, A., 634, 1170.
- Thio-esters, action of compounds of diazomethane series on, A., 84.
- Thioindigo dyes, manufacture of, (P.), B., 669.
vat, printing with, (P.), B., 59.
- Thioindigo red, oxidation of, A., 1071.
- Thiol compounds, content of, in normal and unfed rats, A., 659.
as anti-oxidation catalysts, A., 1375.
cuprous derivatives of, A., 830.
- Thiol groups, effect of, on cell division, A., 255.
- Thionaphthen, condensation of, with anisilic and benzilic acids and xanthhydrol, A., 361.
- Thionaphthens, hydroxy-, preparation of, (P.), B., 195*.
- Thionaphthen dyes, A., 1163.
- Thionaphthenquinone, 2-*p*-hydroxy-anil of, A., 1163.
- 2-(2'-Thionaphthenyl)quinoline-4,3'-dicarboxylic acid, A., 1164.
- 9-Thionaphthenylxanthen, A., 361.
- Thionyl chloride. See under Sulphur.
- Thiopter-rhenic acid. See under Rhenium.
- Thiophanes, reactions of in heptane and naphtha solutions; and their derivatives, A., 464.
- Thiophen, crystal structure of, A., 152.
condensation of, with anisilic and benzilic acids and xanthhydrol, A., 361.
action and fate of, in dogs, A., 385.

- Thiophen series, A., 104.
 Thiophenols. See Phenols, thio-.
 Thiosulphates. See under Sulphur.
 Thiosulphatopentacyanocobaltic acids, A., 809, 1140.
 Thiosulphonic acids, aromatic, formation of, from disulphides, A., 237.
 Thioxanthone, 1:2-*di*hydroxy-, derivatives of, and 4-bromo-1:2-*di*-hydroxy-, A., 628.
 Thioxins, syntheses of, A., 738.
 Thistles, control of, B., 268.
 Thinram sulphides, manufacture of, (P.), B., 965.
 disulphides, tetra-alkyl derivatives of, (P.), B., 711.
 polysulphides, substitution products of, A., 1151; (P.), B., 668.
 Thixotropy, theory of, A., 428.
 Thorium, resistance of, A., 674.
 cathode-ray spectrum of, A., 1345.
 γ -rays from, A., 1349.
 range of α -particles from, A., 16.
 volatilisation of, A., 1255.
 prevention of corrosion of, (P.), B., 847.
 powder, production of, B., 118.
 content of, in plants, A., 774.
 Thorium chloride, adsorption of, by clays, A., 298.
 hydroxide, colloidal, gels and sols, surface change in, A., 797.
 nitrate, equilibrium of ether, water, and, A., 159.
 anhydrous, dissociation pressure of, A., 170.
 dioxide (*thoria*), production of, (P.), B., 200.
 gels, A., 1229.
 equilibrium of cerium dioxide with, A., 157.
 Thorium-B chloride, exchange of, with lead ions, A., 15.
 Thorium-C, α -rays from, A., 280, 1349.
 Thorn apple. See *Datura stramonium*.
 Threads, manufacture of, (P.), B., 110, 128.
 from colloidal protein solutions, (P.), B., 482.
 treatment of, (P.), B., 343.
 nozzle for wetting of, (P.), B., 627.
 wet twisting of, (P.), B., 626.
 artificial, production of, (P.), B., 342, 582, 672, 715, 799, 877, 1043.
 by dry-spinning, (P.), B., 921.
 by twisting, (P.), B., 627.
 winding device for, (P.), B., 17.
 from viscose, (P.), B., 626.
 of reduced lustre, (P.), B., 878, 1044.
 manufacture and treatment of, (P.), B., 346.
 treatment of, (P.), B., 878.
 spinning apparatus for, (P.), B., 389.
 production of solutions for spinning of, (P.), B., 625.
 apparatus for stretching of, (P.), B., 583.
 crimped, manufacture of, (P.), B., 674.
 hollow, manufacture of, (P.), B., 342.
 textile, treatment of, on spools, etc., with liquids, (P.), B., 923.
d-Threose, synthesis of, A., 1037.
 Thrombo-angitis obliterans, A., 1325.
 Thrombocytes, catalase of, A., 858.
 Thucholite, A., 930.
 Thunderstorms, and penetrating rays, A., 143.
 β -Thujaketo-lactone, and its semicarbazone, A., 357.
 Thymine series, molecular rearrangement in, A., 100.
 Thymocresin, action of, A., 878.
 Thymol, production of, (P.), B., 150, 195*, 386.
 and its isomerides and homologues, (P.), B., 668.
 action of oxalyl chloride on, A., 1411.
 β -chloroallyl ether, A., 952.
 Thymoquinhydrone, reduction potential of, A., 435.
Thymus capitatus, essential oil from, B., 945.
 Thymus extracts, antagonism of adrenaline and, A., 1193.
 Thymus gland, synthesis of histone of, A., 1317.
 Thytrons, A., 995.
 Thyroid (*thyroid gland*), manufacture of extract of, (P.), B., 782.
 effect of extracts of, on glycogen distribution, A., 764.
 effect of removal of, on nutrition, A., 127.
 influence of nutrition on action of, A., 253.
 action of, on acid-base metabolism, A., 1451.
 on basal metabolism, A., 1462.
 on blood-fat and -lipin, A., 1462.
 on blood-sugar regulation, A., 1462.
 on calcium of blood-serum, A., 1462.
 on creatine in liver and muscle, A., 268.
 compared with that of thyroxine, A., 268.
 Thyroid, assay of hormones in, A., 1463.
 iodine content of, in relation to geographic location, A., 380.
 separation of iodine from, by ultra-violet light, A., 1081.
 metabolism of iodine in, A., 761.
 fowls', size and iodine content of, A., 1442.
 hyperthyreotic, distribution of iodine in, A., 760.
 of lambs, iodine content of, B., 316.
 normal and pathological, iodine content of, A., 508.
 ox, iodine content of, A., 508.
 ox and sheep, iodine content of, A., 111.
 rat's, influence of iodised milk and potassium iodide on, A., 760.
 determination of lipins in, A., 643.
 Thyronamine, synthesis of, A., 1410.
 Thyroxine, action of, A., 1337, 1462.
 and its substituted derivatives, A., 398.
 on carbon and nitrogen in urine, A., 987.
 on fat-hydrolysing enzymes, A., 1194.
 on iodine in blood and urine, A., 1337.
 on sodium chloride in blood, A., 987.
 compared with that of thyroid, A., 268.
 on tissue metabolism, A., 1462.
 on growth of tumours, A., 760.
 nutritive effect of, A., 1097.
 in muscle, A., 1096.
 proteases in blood and urine after administration of, A., 771.
 diazo-reaction of, and its inhibition, A., 398.
 Tigris, chemical nature of, A., 1442.
 Tiles, (P.), B., 66.
 manufacture of coverings for, (P.), B., 542.
 fireproof, (P.), B., 842.
 red, cause of efflorescence on, B., 977.
Tilletia tritici, toxicity of inorganic salts to spores of, B., 313.
 Timber. See Wood.
 Tin, atomic weight and isotopes of, A., 280.
 production of electrolytically, (P.), B., 121.
 extraction of, from its ores, (P.), B., 121, 209.
 recovery of, in lead-refining, (P.), B., 539.
 from scrap tin plate, etc., (P.), B., 165*, 548, 724.
 cold-working of, B., 299.
 spectrum of, in the Schumann region, A., 1103.
 Zeeman effect in, A., 1344.
 infra-red spectrum of, A., 1104.
 X-ray absorption by, A., 1105.
 magnetic disturbance of superconductivity of, A., 790.
 photo-electric effect of, A., 10.
 thermal conductivity of, A., 674, 792.
 effect of temperature on solubility of, in milk, B., 495.
 effect of p_H on corrosion of, A., 1133.
 miscibility of copper and lead with, B., 928.
 diffusion of, into iron, B., 1053.
 coatings for, (P.), B., 127.
 cathodic separation forms of, A., 47.
 grey, formation of, from white tin, A., 1016.
 white, arrangement of micro-crystals in, A., 1358; B., 545.
 Tin alloys with antimony, A., 33, 1118, 1364.
 with bismuth, crystal structure of, A., 676.
 with copper, A., 418, 676.
 thermal conductivity of, A., 157.
 β -phase in, A., 33.
 crystal structure of, A., 414.
 equilibrium of, A., 900.
 effect of phosphorus and oxygen on, B., 887.
 with copper and zinc, (P.), B., 812.
 anti-frictional, (P.), B., 724.
 with gold, A., 1223.
 with iron, B., 1053.
 with lead, refining of, (P.), B., 725.
 with silver, A., 1223.
 Tin salts, electrolyser for electrolysis of, (P.), B., 305.
 Tin chlorides, manufacture of, (P.), B., 540.
 nickel chloride, crystal structure of, A., 151.
 oxide, band spectrum of, A., 544.
 Stannous chloride, anhydrous, preparation of, A., 182.
 sulphate, preparation of, B., 802.
 Stannic salts, reduction of, in analysis, A., 590.
 Stannic chloride, molecular compound of, with benzeneazo- α -naphthol, A., 614.
 Stannic acid gels, alkali peptisation of, A., 909.
 Stannic acids, A., 323.
 Stanniphosphoric acid, A., 57.

- Tin organic compounds**, formation of, by reduction of organic mercury compounds by stannous salts, A., 503.
- Tin aryl halides**, A., 1436.
- dialkyls and diaryls, A., 1150.
- di-*p*-halogenophenyl salts and oxides, A., 638.
- methyl derivatives, A., 78.
- sodium trimethyl, action of chloroform on, A., 78.
- trimethylhydroxide, reaction of, with methyl iodide, A., 1280.
- Tin determination** :—
- determination of, iodometrically, A., 928.
- volumetrically, by reduction with lead, A., 590.
- in alloys with high copper content, B., 25.
- in anti-friction alloys, B., 1056.
- in the organism, A., 643.
- Tin bronze**, cast, heat-treatment and cooling of, B., 978.
- Tin ores**, smelting of, (P.), B., 724.
- electrolytic reduction of, (P.), B., 164.
- low-grade, treatment of, (P.), B., 164.
- Tin plate**, corrosion of, B., 1054, 1154.
- by fruit juice, B., 809.
- mottled, B., 1013.
- scrap, detinning of, (P.), B., 548, 1103.
- recovery of tin from, (P.), B., 724.
- Tins**, preserving, lacquers for, B., 451.
- Tinctura Chinæ composita**, preparation of, by diacolution, B., 823.
- Tinctures**, effects of variation of alcohol concentration in, B., 904.
- examination of, B., 1154.
- refractometric examination of, B., 610.
- determination of alcohol in, B., 1026.
- Tinea pellionella*. See Moths, clothes.
- Tineola biselliella*. See Moths, clothes.
- Tissues**, growth and metabolism of, *in vitro*, A., 979.
- equilibrium of growth of, A., 400.
- uncontrolled growth of, A., 383.
- action of X-rays on, A., 389.
- effect of X-rays on growth and vitality of, A., 122.
- respiration of, in calcium free media, A., 982.
- effect of amino-acids on, A., 1182.
- influence of boron compounds on, A., 982.
- effect of sodium nitrite on, A., 1182.
- respiration and metabolism of, A., 646.
- action of chloroform and ether on oxidation-reduction in, A., 649.
- fatty acids and unsaponifiable substances in, A., 975.
- nitrogen and sulphur in urine after injury to, A., 510.
- oxygen consumption, respiratory quotient and reduction of methylene blue by, A., 1448.
- staining of, A., 975.
- diagnosis of, A., 251.
- connective, Mallory's stain for, A., 975.
- dried, chlorine content of, A., 974.
- dying, electrical resistance of, A., 1451.
- formalin-fixed, Gram-Peppenheim stain for, A., 756.
- hepatic, effect of glutathione on respiration of, A., 1182.
- human, spectrographic analysis of, A., 1442.
- living, reversible coagulation in, A., 649, 1186, 1328.
- mammalian embryonic, respiration of, A., 1182.
- nervous, staining of, with silver, A., 755.
- normal and malignant, autolysis in, A., 1445.
- oxygen capacity of extracts of minced, A., 1445.
- metabolism of, A., 1182.
- determination of calcium and phosphorus in, A., 506.
- See also Animal tissues.
- Titanite**, crystal structure of, A., 60.
- Titanium**, recovery of, (P.), B., 719, 1094.
- spectrum of, as a photometric scale, A., 663.
- ionised, spectrum of, A., 6.
- valency and diamagnetism of, in the tetrachloride, A., 1000.
- and its alloys with zirconium, resistance of, A., 552, 674.
- in New Zealand soils, B., 454.
- Titanium alloys**, electrodes of. See under Electrodes.
- with aluminium, constitution of, A., 676.
- with copper, capable of age-hardening, B., 253.
- with mercury, A., 1377.
- Titanium compounds**, precipitation of, (P.), B., 294.
- Titanium bromides**, A., 51.
- carbide, crystal structure of, A., 789.
- hydride, crystal structure of, A., 413.
- properties of, A., 1127.
- Titanium dioxide (titania)**, manufacture of, (P.), B., 200, 804, 1094, 1139.
- from bauxite residues, (P.), B., 539.
- heat of formation of, A., 1236.
- effect of, in refractory materials, B., 491.
- action of, in rubber mixtures, B., 895.
- gel, A., 38.
- colloidal, production of, (P.), B., 1094.
- sulphate, production of double salts of, with sulphates, (P.), B., 804.
- Titanous chloride**, use of, in reduction of unsaturated compounds, A., 233.
- Titanic acid**, ageing of solutions of, A., 426.
- Orthotitanates**, X-ray structure of, A., 897.
- Titanium organic compounds** with ethylene glycol and phthalic acid, B., 675.
- Titanium determination and separation** :—
- determination of, colorimetrically, A., 814.
- as phosphate, A., 1386.
- separation of, from aluminium and iron, A., 589.
- Titanium group**, chemistry and geochemistry of, A., 287.
- Titanium white**, preparation of, A., 446.
- German specification for, B., 768.
- Toad**, basic components of secretion of skin of, A., 1310.
- Tobacco**, composition of, A., 1101.
- treatment of, (P.), B., 319, 782.
- with ultra-violet rays, (P.), B., 742.
- to render the smoke non-poisonous, (P.), B., 742.
- steam-air treatment of, B., 45.
- bleaching and improvement of taste of, B., 823.
- curing of, (P.), B., 275.
- burning quality of, B., 1112.
- chemistry of, B., 463.
- acidity of, in relation to hygienic evaluation, B., 414.
- enzymes of, A., 537.
- formation of carbon dioxide during fermentation of, B., 463.
- extraction of nicotine from, (P.), B., 863.
- steam distillation of nicotine from, B., 90.
- and tobacco-smoke, nicotine content of, B., 222, 1027.
- free nicotine and alkalinity of, B., 90.
- degradation of nicotine in, A., 402, 1101.
- bacterial decomposition of nicotine in, A., 876.
- effect of air drying on nitrogenous constituents of, A., 402.
- paraffins of, A., 132.
- cause of "wildfire" in, A., 133.
- antiseptic, manufacture of, (P.), B., 1122.
- cigar-leaf, Pennsylvania, composition and quality of, and fertiliser treatment, B., 557.
- cured, treatment of, to reduce poisonous effects of nicotine, (P.), B., 136.
- Kentucky, potassium chloride and sulphate content of, B., 862.
- natural, with various nicotine contents, B., 268.
- raw, nicotine content of, B., 653.
- Russian, chemical composition of 1927 and 1928 crops of, B., 45.
- pentosans in, B., 653.
- yellow, curing of, B., 456.
- composition of ash of, and determination of nicotine, A., 132.
- determination of nicotine in, B., 318, 653.
- determination of essential oils of, B., 90.
- determination of pectin substances in, B., 90.
- determination of moisture in, by Steich-hygrometer, B., 222.
- Tobacco leaves**, chemical changes during curing of, A., 886.
- green, organic acids of, A., 775.
- Tobacco plants**, fertilisers for, B., 267.
- potash fertiliser experiments on, B., 456.
- regulation of growth of, with boron compounds, B., 457.
- relation of nitrate-nitrogen and nitrification to growth of, following timothy, B., 734.
- chemistry of, A., 1340.
- control of black root-rot in, B., 1068.
- mosaic disease of, A., 1201.
- carbohydrate variations in, A., 886.
- influence of, on nicotine content, A., 402.
- nicotine metabolism in, A., 132; B., 1023.
- volatilisation of nicotine from, A., 990.
- low-nicotine, breeding of, B., 1112.
- Tobacco smoke**, reaction of, in relation to quality of tobacco, B., 653.
- separation of poisonous constituents of, (P.), B., 136.

Toluene compounds, Me = 1.

Tobacco smoke, effect of, on blood-sugar, A., 981.
 analysis of, A., 661.
 determination of nicotine in, B., 653, 905.
 Tolane, action of lithium on, A., 948.
o-Tolidine fluosilicate, A., 612.
o-Tolidine, 6-nitro-, bisdiazonium borofluoride, A., 947.
 4-*o*-Tolidino-6-methoxy-2-methylquinoline, and its acetyl derivative, A., 372.
 Toluene, thermal properties of, A., 1004.
 nucleus, direct *meta*-substitution in, A., 79.
 nitration of, A., 1405.
 formation of methane from, A., 1043.
 formation of ethylsulphuric acid in electrochemical oxidation of, A., 339.
 photochemical oxidation of, A., 1019.
 pyrogenetic decomposition of, at high pressure, A., 832.
 condensation of, with 3:5-dinitrophthalic acid, A., 1420.
 oxidation of, in the organism, A., 1183.
 colour tests for, B., 433.
 determination of, in Oklahoma petroleum, B., 660.
 Toluene, dibromo-, action of magnesium on, A., 1405.
o-chloro-, preparation of, from toluene-*p*-sulphonyl chloride, A., 610.
 2:4-dichloro-, chloromethyl derivative, and 4-chloro-2-cyano-, A., 623.
 2-fluoro-3-nitro-, A., 1408.
 nitro-, electrical and electro-optical constants and purity of, A., 293.
 chlorination of, and *di*- and *tri*-chloronitro-, and 2:6-dichloro-3:4-dinitro-, A., 611.
 trinitro-, purification of, (P.), B., 319.
 physical tests of, B., 655.
 determination of, in presence of other aromatic nitro-compounds, A., 752.
m-Tolueneazo-*o'*-aminobenzene, and its benzoyl derivative, A., 211.
p-Tolueneazoethane, pentachloro-3:5-dibromo-, and -5-chloro-3-bromo-, A., 835.
p-Tolueneazoethylene, $\beta\beta$ -dichloro-*a*-mono- and -*di*-bromo-, and β -chloro- $\alpha\beta$ -dibromo-*a*-mono- and -*di*-bromo-, A., 835.
 Tolueneazohomophthalimides, and *m*-nitro-, A., 721.
 6-Tolueneazo-5-hydroxyhydrindene, A., 83.
o-Tolueneazo- β -hydroxynaphthoic *p*-aniside, *p*-amino-, and its acetyl derivative, B., 484.
p-Tolueneazosalicylic acid, molecular compounds of, with benzoyl bromide and propionyl chloride, A., 613.
l-*a*-Toluenesulphophenylacetic acid, ethyl ester, A., 1291.
p-Toluenesulphonamide, direct interchange of chlorine in interaction of, with *N*-chloroacetanilide, A., 949.
p-Toluenesulphon-*n*-amylamide, A., 340.
p-Toluenesulphon-*n*-butylamide, A., 340.
 Toluenesulphonchloroacetamide, A., 124.
p-Toluenesulphon-3-chloroanilide, A., 1288.
p-Toluenesulphon-*n*-heptylamide, A., 340.
p-Toluenesulphon-*n*-hexylamide, A., 340.
 Toluenesulphonic acid, *mono*- and *di*-nitro-2-aminophenyl and their derivatives, A., 1287.
p-Toluenesulphonic acid, oxidation of, electrochemically, A., 220.
 use of, as catalyst, in preparation of acetals, A., 335.
 5-amino- and 5-hydroxy-2-methoxyphenyl esters, A., 843.
p-iodophenyl ester, and its iododichloride, A., 837.
 β -*p*-Toluenesulphonic acid, α -benzylidene-glycerol ester, A., 605.
 Toluenesulphonic acids, *l*-menthyl esters, A., 961.
p-Toluenesulphon-*p'*-nitroanilide, piperidine salt, A., 630.
p-Toluenesulphonotoluidides, amino-, and nitro-, A., 99.
p-Toluenesulphonyl fluoride, 2-chloro-5-nitro-, A., 1405.
dl-Toluene-2-sulphonylalanine, 4-nitro-, A., 481.
 1-*p*-Toluenesulphonylbenzotriazole, A., 1285.
p-Toluenesulphonylcytosine, A., 1171.
p-Toluenesulphonylmethanesulphonylmethane, A., 1395.
p-Toluenesulphonyl-*o*-phenylenediamine, A., 1285.
 1-*p*-Toluenesulphonyl- β -2:3:5:6-tetramethylpiperazine-*d*-methyleneamphor, A., 851.
 2-*p*-Toluenesulphonyl-3:4:6-triacetyl- α -glucosidyl chloride, A., 1400.
 2-*p*-Toluenesulphonyl-3:4:6-triacetyl- β -methylglucoside, A., 1400.
 Toluenethioglycoliglyoxylic acids, A., 1163.
p-Toluenethiosulphonic acid, methyl ester, and its derivatives, A., 1395.

Toluene compounds, Me = 1.

Toluene-4-thiosulphuric acid, 2:5-diamino-, A., 498.
o-Toluic acid, preparation of, A., 840.
o-Toluic acid, 4-amino-, 4-bromo-, and 4-chloro-2-hydroxy-, A., 727.
 3-chloro-, and its conversion into 3-chloro- α -hydroxyphthalide, A., 220.
 4-chloro-, A., 623.
 6-hydroxy-, from dextrose by action of *Penicillium*, A., 525.
m-Toluic acid, 2-amino- and 2-cyano-, and their methyl esters, A., 1296.
 2-hydroxy-, acetyl derivative, crystallography of, A., 415.
o-Toluidine, 3-chloro-, and its acetyl derivative, A., 1283.
 3-nitro-, diazonium fluoborate, A., 1408.
m-Toluidine, 2-fluoro-, and its salts and derivatives, A., 1408.
p-Toluidine, adsorption of, in solution, A., 558.
 surface tension of aqueous solutions of, A., 559.
 Toluidines, action of methyl alcohol on hydrochlorides of, A., 950.
 bromo- and chloro-stannates of, A., 790.
 Toluidines, *di*- and *tri*-chloro-, and their derivatives, A., 611.
p-Toluidines, 2-halogeno-3- and -5-chloro-, separation of mixtures of, (P.), B., 434.
 2-halogeno-3-chloro-, manufacture of sulphonic acids of, (P.), B., 434.
o-Toluidine-3:5-disulphonyl chloride, and its anilide, A., 1284.
 2-Toluidino-3-benzamido-6:7-methylenedioxyquinoline, A., 743.
 2-Toluidino-3-benzamidoquinolines, A., 743.
 2-*p*-Toluidino-3-cyano-6:7-dimethoxyquinoline, A., 237.
 2-*p*-Toluidino-3-cyanoquinoline, A., 237.
p-Toluidinohydroangustione, A., 488.
 2-Toluidino-5-hydroxy-1:3:4-thiadiazines, and their acetyl derivatives, A., 635.
 2-*p*-Toluidino-6-keto-4:5-benzo-1:3-thiazine, A., 634.
 5-*o*-Toluidino-2-keto-2:3-dihydro-1:3:4-thiadiazole, A., 475.
 Toluidinomethylenecamphors, isomeric, rotatory dispersion of, A., 1160.
 2-*p*-Toluidino-4-methylthiazole, and its derivatives, and *o*-bromo-, A., 969.
a-*m*-Toluidinopropionic acid, 4-chloro-, A., 1046.
 3-*p*-Toluidino-5-thio-1:2:4-triazole, and its silver salt and derivatives, A., 100.
 Tolual. See Cresols.
p-Toluonitrile dihydrohalides, A., 609.
p-Toluoylacetone, A., 1164.
dl-*p*-Toluoylalanine, A., 481.
 2-*p*-Toluoylbenzoic acid, 3:5-diamino- and 3:5-dinitro-, A., 1420.
p-Toluoyl-*p*-methylbenzylbenzene, and its oxime, A., 719.
 γ -*p*-Toluoyl- β -methylbutyric acid, A., 1427.
 γ -*p*-Toluoyl-3-methylpropane- $\alpha\alpha$ -dicarboxylic acid, A., 1427.
 3-*p*-Toluoyl-7-methylthionaphthen-2-carboxylic acid, 5-chloro-, A., 1163.
 2-*p*-Toluoyl-3-naphthoic acid, A., 1064.
p-Toluoylphenylacetylene, A., 235.
 1-Toluoylpyrrole-2-aldehyde, and its derivatives, A., 362.
p-Toluoylthionaphthenecarboxylic acids, A., 1163.
 Toluquinolsulphonic acid, barium salt, A., 93.
 Toly mono- and tetra-methylbutyl ethers, A., 346.
 isopropyl ethers, and their rearrangement, A., 838.
m-Toly isopropenyl ether, A., 1288.
p-Toly trichloromethyl carbonate, A., 212.
 iododifluoride, A., 611.
 methyl ether, reaction of, with alkylmalonyl chlorides, A., 622.
 methyl ketoxime, *O*-phenylcarbamyl derivative, A., 210.
p-Tolylacetoneitrile oxide, oximino-, benzoyl derivatives, A., 1157.
p-Tolylallylcarbinol, A., 618.
 5-*p*-Tolylaminocanthraquinone, production of, B., 105.
 α -*p*-Tolylaminoglyoxime, benzoyl derivative, A., 1157.
 Tolyldiamino- γ -triazines, synthesis of, and their salts and acetyl derivatives, A., 101.
 γ -*p*-Tolylaminovaleric acid, A., 944.
 s -*o*-Tolylamylthiocarbamides, A., 969.
p-Toly- β -anilino- Δ^2 -propenyl ketone, A., 1164.
p-Toly 1-anthraquinonyl ketoxime anhydride, A., 357.
p-Tolylantipyriliminophthalonimide, A., 1414.
 Tolyarsinic acid, 6-amino-4-hydroxy, 4:6-dihydroxy-, and their derivatives, and 6-nitro-4-hydroxy-, A., 1434.
N-*o*-Tolybenzimidino-*mono*- and -*di*-chlorophenyl ethers, A., 501.
 2-*m*-Tolybenzotriazole, A., 211.
m-Tolyboric acid, A., 244.
s-Tolybutylthiocarbamides, A., 969.

Toluene compounds, Me=1.

- Tolylcarbamyloacetoximes, A., 210.
 Tolylcarbazine acids, ethyl esters, A., 475.
 1-Tolylcarbohydrazides, A., 475.
 1-*o*-Tolylcarbohydrazido-5-thiocarbonallylamide, A., 475.
 1-*o*-Tolylcarbohydrazido-5-thiocarbonanilide, A., 475.
 1-*o*-Tolylcarbohydrazido-5-thiocarbon- β -naphthylamide, A., 475.
 1-*o*-Tolylcarbohydrazido-5-thiocarbonoluidides, A., 475.
 1-*o*-Tolylcarbohydrazido-5-thiocarbon-*m*-4-xylylide, A., 475.
p-Tolyl chlorobromomethyl ketone, A., 91.
p-Tolyl dichloromethyl ketone, A., 91.
p-Tolyl cyanomethyl ketone, A., 91.
p-Tolyl *n*-deoyl ketone, A., 1158.
o-Tolyl diguanide hydrosulphide, A., 474.
 γ -*o*-Tolyl- α -dimethylbutyric acid, acid chloride of, A., 948.
p-Tolyl-2,6-dimethyl-1:4-dihydropyridine-3:5-dicarboxylic acid, and 3':5'-*di*nitro-, ethyl esters, A., 1072.
N-*o*-Tolyl-2:5-dimethylpyrrole-3-carboxylic acid, A., 1306.
as-p-Tolyl-*p*-diphenylethane, A., 947.
o-Tolyl-*s*-di(thiocarbamyl)hydrazine, A., 100.
p-Tolylenediamine, differentiation of *p*-phenylenediamine and, B., 195.
 2:4-Tolylenediamine, preparation of, A., 835.
p-Tolyl β -ethoxy- Δ^2 -propenyl ketone, A., 1165.
 β -*p*-Tolylethyl bromide and ethyl ether, A., 1292.
 β -*p*-Tolylethylmalonic acid, ethyl ester, A., 1292.
 β -*o*-Tolylethylmethylmalonic acid, ethyl ester, A., 232.
 Tolyethylthiocarbamides, A., 969, 1076.
S-*o*-Tolyl-*n*-hexylthiocarbamide, A., 969.
N-*p*-Tolylhomophthalimide, and its derivatives, A., 1155.
p-Tolylhydrazines, halogen-substituted, action of chloral on, A., 835.
o-Tolylhydrazones, action of bromine on, A., 1416.
 α -Tolylhydrobenzoins, A., 1290.
 2-*p*-Tolylimino-3:4-dimethyl-2:3-dihydrothiazole, and its hydride, A., 969.
 1:2-*endo-p*-Tolylimino-3-keto-2:3-dihydro-1:2-benzisodiazole, 6-nitro-1:2-3'-bromo-, and -3:5-dibromo-, and their oxides, A., 1416.
 3-Tolyliminothiourazole, silver salt and acetyl derivative, A., 100.
 γ -*p*-Tolyliminovaleraniide, A., 944.
 2-*p*-Tolylmethylamino-4-methylthiazole, A., 969.
 8-*o*-Tolyl- γ -methyl-*sec*-butyl alcohol, A., 948.
 γ -*o*-Tolyl- α -methylbutyric acid, A., 232.
p-Tolylmethylisooxazoles, A., 1165.
 1-Tolyl-5-methylpyrazoles, 4-hydroxy-, A., 742.
 5-*p*-Tolyl-3-methylpyrazole, A., 1164.
m-Tolyl-1'-naphthylsulphone, 4:2'-*di*hydroxy-, A., 1154.
 α -Tolylnitrobenzylhydrazidines, *mono*- and *di*-bromo-, A., 1416.
p-Tolyl-*n*-octyl ketone, A., 1158.
 α -Tolyl oximinoethyl ketone, and its derivatives, A., 239.
 5-*p*-Tolyl-*oxy-p*-cresol, 3:3':5'-*tri*chloro-, A., 1153.
 2-*p*-Tolyl-*oxy*-2-ethoxy-4-methyl- $\Delta^{3:5}$ -cyclohexadienone, 6:3':5'-*tri*chloro-, A., 1153.
 2-*p*-Tolyl-*oxy*-2-methoxy-4-methyl- $\Delta^{3:5}$ -cyclohexadienone, 6:3':5'-*tri*chloro-, A., 1153.
 1-Tolyl-3-phenyl- Δ^2 -1:2-diazene, A., 1074.
p-Tolyl- Δ^2 -propenyl ketone, A., 1164.
 β -*o*-Tolylisopropyl methyl ketone, and its semicarbazone, A., 948.
s-p-Tolyl-*n*-propylthiocarbamide, A., 969.
 1-*p*-Tolylpyrrolidine, synthesis of, and its chloroplatinate, A., 361.
 2-*p*-Tolylquinoline, 4-amino-, and its salts, A., 1307.
 2-*p*-Tolylquinoline-4-carboxylic acid, derivatives of, A., 1307.
 2-*p*-Tolyl-4-quinolylcarbamide, A., 1307.
 (2-*p*-Tolyl-4-quinolyl)-3-methyl-5-pyrazolone, A., 1307.
 2-*p*-Tolyl-4-quinolylurethane, A., 1307.
p-Tolylquinonitrole, A., 838.
p-Tolylstannic acid, A., 503.
 Tolylsulphamic acids, sodium salts, A., 720.
 3-Tolyl-1:2:3:4-tetrahydroquinazoline-4-carboxylic acids, 4-hydroxy-2-thio-, A., 842.
p-Tolylthallium dibromide, A., 971.
p-Tolyl-*p*-thiocarbamidobenzaldoxime, A., 842.
 α -*p*-Tolylthiocarbamido- γ -carbethoxyacetamide, A., 496.
 1-Tolylthiocarbamyl-4:5-benzo-1:2:3-triazoles, A., 854.
 Tolythiocarbimides, *hexasulphides* of, A., 1407.
p-Tolyl thiocyanomethyl ketone, A., 91.
 4-*N*-*p*-Tolylthiolaminophenol, A., 1285.
N-*p*-Tolylthiolbenzoquinoneimine, A., 1285.
 β -*p*-Tolylthiol- β -phenylethyl methyl ketone, A., 1157.

Toluene compounds, Me=1.

- 4-*p*-Tolylthiosemicarbazide, preparation of, and its hydrochloride, and reaction with ketones, A., 486.
 1-*o*-Tolyl-3-*p*-tolyl- Δ^2 -1:2-diazene, A., 1074.
 4-Tolyl-1:3:5-triazines, 2-amino-6-thiol-, and their salts, A., 239.
 4-Tolylundecic acid, 4-cyano-, A., 1290.
 4-Tolylurazoles, 3-imino-5-thiol-, and their derivatives, A., 100.
 Tomatoes, composition of, and their preserves, B., 317.
 seed treatment for damping-off of, B., 1112.
 fertilisation of sweet corn, musk melons and, in a 3-year rotation, B., 1067.
 effect of phosphorus deficiency on, A., 1200.
 colouring matter of, A., 536.
 virus of mosaic disease in, A., 778.
 analysis of, A., 1200.
 Tonka-bean oil, B., 1146.
 Tools, compositions for making of, (P.), B., 546.
 boring, cutting or drilling, facing of, (P.), B., 811.
 cutting, manufacture of, (P.), B., 546.
 nickel alloys for, (P.), B., 302.
 Tooth pastes. See under Teeth.
 Toothache, artificial, in rabbits, A., 383.
 Torbanites, distillation of, (P.), B., 190.
 African, evaluation of, B., 184.
 carbonisation of, B., 1127.
 ormeo, recovery of mineral oil from, in S. Africa, B., 999.
 Torulin, maintenance nutrition in relation to, A., 270.
 tests of curative activity of, on pigeons and rats, A., 270.
 precipitation of, by phosphotungstic acid, A., 270.
 Toughness, relation between plasticity, elasticity, brittleness, and, B., 949, 950.
 Tourmaline, formula of, A., 550, 595.
 measurement of electric moment of, A., 23.
 Towers, filling bodies for, (P.), B., 141.
 bubble, (P.), B., 280.
 Toxic action, A., 537.
 Toxicarol, toxicity of, A., 870, 1065.
 Toxins, bacterial, A., 1460.
 Tracing cloth, (P.), B., 1045.
 Tragacanthin, A., 535.
 Train oil, selective hydrogenation of, B., 499.
 Transference numbers, effect of concentration on, A., 1011.
 Transformers, iron-nickel alloy for cores of, (P.), B., 811.
 electric, elimination of hum in, (P.), B., 167.
 Transformer oils, production of, B., 429.
 determination of refining degree of, B., 792.
 preservation of, (P.), B., 579, 937*.
 dielectric loss in, B., 848.
 dielectric losses and electric dipole moment in, B., 815.
 ageing of, B., 749.
 Transparent materials, sheet, manufacture of, (P.), B., 583.
 Travertine, artificial, manufacture of, (P.), B., 843.
 Trees, expulsion of gases and liquids from trunks of, A., 1465.
 nicotine in paint for control of woolly aphid in, B., 268.
 deciduous, effect of hydrocarbon oils on transpiration of, A., 1339.
 forest, distribution of, A., 1266.
 Angola, oil seeds of, B., 816.
 Trehalose, from yeast, A., 768.
 Tremolite, rôle of water in, A., 1146.
 from Behar, India, A., 595.
 from Monto Spinoza, Campiglia, A., 1391.
 1:9:9-Triacetoxo-2-acetoglucoxyanthrone, A., 940.
 3:4:6-Triacetoxophenanthrene, A., 1313.
 3:4:5-Triacetylfructose, 2-fluoro-, A., 716.
 Triacetylalactal, A., 1400.
 α -2:3:4-Triacetyl-*d*-glucose, 1-bromo-, A., 1040.
 Triacetylmethylfructoses, and 2-fluoro-, A., 716.
 2:3:6-Triacetyl- β -methyl-*d*-glucoside, preparation of, A., 1399.
 γ -Triacetylmethyl-*d*-ribosides, A., 938.
 $\alpha\beta$ -Triacetylpentane, A., 933.
 Triacetylquinovic acid, derivatives of, A., 1159.
 Triacetylribosidyl bromide, A., 938.
 Trialkyl phosphates, production of, (P.), B., 1086.
 Tri-*n*-alkylbismuthines, preparation of, A., 609.
 Tri-*n*-amylarsine, salts and oxide of, A., 472.
 Tri-*n*-amylbismuthine, A., 609.
 Triamyllose, A., 1276.
 Triarachidonin bromide, A., 602.
 Triaryl phosphates, manufacture of, (P.), B., 195*.
 purification of, (P.), B., 21*.

- Triarylbenzenylamidines, isomeric, A., 87.
 Triarylmethanes, hydroxy-, halogenated compounds of, (P.), B., 238.
 sulphonation products of, (P.), B., 238.
 Triaryl methyl salts, coloured, A., 1052.
 Triazelaïn, B., 258.
 Triazines, thiolamino-, synthesis of, A., 239.
 γ -Triazines, A., 101, 239, 368.
 1:2:4-Triazole, complex salts of, A., 1310.
 Triazoles, formation of, A., 238, 1074.
 synthesis of, A., 239, 854, 852.
 1:2:4-Triazoles, synthesis of, A., 496.
 1:3:4-Triazoles, formation and analysis of, A., 100.
 manufacture of, (P.), B., 336.
 2:3:4-Tribenzoyl- β -methyl- Δ^5 -galactoseenide, A., 1039.
 Tribenzoylphloroglucinaldehyde, A., 1424.
 Tribenzylidenomannitol, preparation of, A., 1033.
 Tribenzylsilicane, A., 1435.
 Triboelectroluminescence, with mercury in glass, A., 22.
Tribolium confusum (flour beetle), toxicity of *p*-dichlorobenzene and naphthalene to, B., 269.
 Tribothermoluminescence, A., 22.
 Triisobutyl sulphide, A., 472.
 Triisobutylarsine, A., 77.
 Tributylarsines, salts and oxide of, A., 472.
 Tri-*n*-butylbismuthine, A., 609.
 Triisobutylene, oxidation of, by ozone, A., 333.
 Tri- ω -*tert*-butylpropylcarbinol, A., 194.
 Tributyrin, fission of, in blood, A., 248.
 Tricarballeylins, A., 1426.
 Tricarbo methoxy-3:4:5-trihydroxycinnamic acid, A., 1162.
 Tricetin, and its acetyl derivatives, A., 1426.
Trichoderma lignorum, yeast-growth stimulants from, A., 1192.
 Tricin, and its acetyl derivatives, A., 1426.
 Tricoumarylarsine oxide, A., 1316.
 SSS-Tricysteinylarsino, A., 105.
 Tridecamethyl- β -methylcellotetraoside, A., 337.
 Tridecoic acid, dihydroxy-, A., 274.
 Tri-*p*-dimethylaminotetraphenylmethane, tri-*p*-amino-, A., 840.
 Tri-*p*-diphenylenepararosaniline hydrochloride, A., 350.
 Tri-2:4-diphenyl- α -naphthyl phosphate, A., 953.
 Triethylamine, velocity of reaction of, with ethyl iodide, A., 1241.
 hydrogen sulphide, A., 1041.
 Triethylamine-trichloromolybdenum, A., 697.
 $\alpha\beta$ -Triethyl-*n*-butyl alcohol, β -cyano-, A., 471.
 Triethylcarbinol, preparation of, A., 819.
 allophanate, A., 471.
 Triethyl- γ -chloro- γ -diethylamino-*n*-propylammonium salts, A., 1042.
 Triethyl- γ -diethylamino- β -methoxy-*n*-propylammonium salts, A., 1042.
 Triethylsulphonium chloride, tri- β -hydroxy-, A., 463.
 Trifluoratosiloxen, A., 1034.
 Trifuctose anhydride, determination of, B., 511.
 Triglycerides, synthetic mixed, structure of, A., 63.
 Trigonelline in coffee, B., 740.
 in Guatemala coffee, A., 886.
 plumbi-iodide, A., 498.
 determination of, in raw and roasted coffee, B., 652.
 Tri-*n*-heptylphosphine, and its oxide, A., 1404.
 1:3:5-Tricyclohexylcyclohexane, A., 720.
 Tri-*n*-hexylphosphine, and its oxide, A., 1404.
 2:4:6-Tricyclohexylpyridine, A., 1431.
 1:3:4-Triketo-2:5-bisdiphenylcyclopentane, and its derivatives, A., 1414.
 Triketohydrindene hydrate, use of, as reagent for products of protein hydrolysis, A., 972.
 Triketopentamethylene, tribromo-, isomerism of, with xanthogallac acid, A., 1060.
 2:4:5-Triketocyclopentane, 1:1:3:3-tetrabromo-, A., 1061.
 1:2:4-Triketo-1:2:3:4-tetrahydronaphthalene, 3:3:6-tribromo-, A., 216.
 Trilaurin, metabolism of. See under Metabolism.
 Trilinolenin, drying and yellowing of, B., 982.
 Trilobamine, and its salts and derivatives, A., 1313.
 3:4:6-Trimethoxyacetophenone, 2-hydroxy-, and its oxime, A., 493.
 3':4':5'-Trimethoxy-6-acetylflavone, 7-hydroxy-, and its acetyl derivative, A., 1305.
 Trimethoxybenzaldehydes, A., 1155, 1411.
 2:3:5-Trimethoxybenzoic acid, A., 1158.
 2:4:5-Trimethoxybenzoic acid, formation of, from dehydrodeguelin, A., 841.
 Trimethoxybenzoic acids, A., 227, 1155.
 2:3:4-Trimethoxybenzoylbenzylamine, A., 217.
 2:4:5-Trimethoxybenzylamine, and its picrate, A., 218.
 3:4:5-Trimethoxy-2-benzylamine-1-carboxylic acid, and its salts, A., 218.
 2:4:5-Trimethoxybenzylhydantoin, A., 484.
 2:4:5-Trimethoxybenzylidenhydantoin, and its bromo-derivative, A., 484.
 7:3:4'-Trimethoxybenzylidenephthalide, A., 960.
 7:3:4'-Trimethoxybenzylphthalide, A., 960.
 2:3:2'-Trimethoxy-5:4'-bis-(β -dimethylaminoethyl)diphenyl ether-6:5'-dialdehyde, and its dimethiodide, A., 636.
 2:4:6-Trimethoxy-5-*sec*-butylpyrimidine, A., 1074.
 2:3:4-Trimethoxychloroacetylbenzylamine, and its salts, A., 217.
 2:4:5-Trimethoxychloroacetylbenzylamine, A., 218.
 3:4:5-Trimethoxy-2-chloroacetylbenzylamine-1-carboxylic acid, A., 218.
 2:3:4-Trimethoxycinnamic acid, A., 213.
 Trimethoxydiethylidiphenyl ether-dialdehyde, and its derivatives, A., 636.
 Trimethoxydivinylidiphenyl ether-dialdehyde, and its discmicarbazon, A., 636.
 3:4:5-Trimethoxyethylbenzene, A., 617.
 5:7:8-Trimethoxyflavone, A., 493.
 3':4':5'-Trimethoxy-5:7-dihydroxyflavanone, A., 1162.
 3':4':5'-Trimethoxy- β - α -naphthylflavone, A., 1423.
 2:4:5-Trimethoxy- ω -nitrostyrene, A., 617.
 2:4:5-Trimethoxyphenylacetic acid, and its amido, A., 484, 1155.
 Trimethoxyphenylacetic acids, A., 227, 1155.
 β -2:4:5-Trimethoxyphenylacrylic acid, α -hydroxy-, benzoyl derivative, A., 484.
 dl-2:4:5-Trimethoxyphenylalanine, synthesis of, and its ethyl ester hydrochloride, A., 484.
 6:7:4'-Trimethoxy-1-phenyl-3:4-dihydroisoquinoline, A., 1168.
 β -2:3:4-Trimethoxyphenylethylamine, and its hydrochloride, A., 213.
 β -2:4:5-Trimethoxyphenylethylamine, synthesis of, A., 617.
 β -3:4:5-Trimethoxyphenylethylamine, preparation of, A., 213.
 detection of, microchemically, A., 1318.
 β -Trimethoxyphenylethylamines, salts and derivatives of, A., 839.
 β -2:4:5-Trimethoxyphenylethylcarbamic acid, ethyl ester, A., 617.
 6:7:4'-Trimethoxy-1-phenyl-2-methyltetrahydroisoquinoline, A., 1168.
 2:4:5-Trimethoxyphenylpropionic acid, and its derivatives, A., 617.
 β -Trimethoxyphenylpropionic acids, and their amides, A., 213.
 2:4:5-Trimethoxyphenylpyruvic acid, A., 484.
 3:3':4'-Trimethoxystilbene-2-carboxylic acid, and its methyl ester, A., 960.
 Tri-*p*-methoxytetraphenylmethane, *p*-amino-, and *p*-trihydroxy-, A., 840.
 Tri-*o*-methoxytolylsulphonium chloride, A., 213.
 2:3:4-Trimethoxy-*o*-xylene, $\omega\omega'$ -diamino-, picrate and dibenzoyl derivative, A., 217.
 3:6:8-Trimethylallantoin-5-carboxylmethylamide, A., 852.
 Trimethylamine, action of, on acetobromo-*l*-rhamnose, A., 69.
 Trimethylammonium bases, A., 1178.
 Tri- δ -methylamylarsine, A., 77.
 2:4:6-Trimethylanilinopyrimidine, A., 1074.
 1:4:9-Trimethylantracene, A., 341.
 2:3:9-Trimethylantracene, A., 612.
 Trimethylantraquinones, and 5:8-dihydroxy-, and their derivatives, A., 1296.
 Trimethylarabonamides, and their reaction with sodium hypochlorite, and the urethane from the 2:3:4-amide, A., 1403.
 dl-Trimethyl-*r*-arabonolactone, A., 826.
 2:4:6-Trimethylbenzaldehyde, nitration of, and *mono*- and *di*-nitro-, and their phenylhydrazones, A., 843.
 2:4:6-Trimethylbenzoic acid, 3-bromo-, A., 348.
 2:4:6-Trimethylbenzyl chloride, A., 1292.
 2:4:6-Trimethylbenzylmalonic acid, ethyl ester, A., 1292.
 $\beta\beta\gamma$ -Trimethylbutan- $\alpha\delta$ -diol, and its dibromide, A., 1417.
 Trimethylbutylarsines, A., 77.
 Trimethylcellulose, A., 941.
 3:4:6-Trimethylcoumarin, A., 1304.
 3:4:7-Trimethylcoumarin, 5-hydroxy-, and its acetyl derivative, A., 1304.
 3:5:8-Trimethyldecahydro-4:8-ethylenopyrindacine, 3:5-dinitro-, A., 631.

- 3:4:6-Trimethyl-2-deoxygluconic acid, phenylhydrazide, A., 1399.
 4:3':5'-Trimethyl-3:4'-diethylpyrromethene, 5-hydroxy-, A., 633.
 9:9:10-Trimethyl-9:10-dihydroacridine, A., 1404.
 1:2:3-Trimethyl-2:3-dihydrobenzimidazole, amino-2-hydroxy-, and its hydrochlorides, A., 852.
 1:2:3-Trimethyl-2:3-dihydrobenzimidazolearsinic acid, 2-hydroxy-, A., 852.
 1:2:4-Trimethyl-1:4-dihydronaphthalene, 3-chloro-1:4-dihydroxy-, A., 1062.
 1:3:5-Trimethyl-7:8-dihydronaphthalene, A., 80.
 Trimethyl-1:1'-dinaphthyl ketones, A., 612.
 4:3':5'-Trimethyl-3:4'-dipropylpyrromethene, 5-bromo-, salts of, A., 746.
 2:5:3'-Trimethyldipyrzylmethane, A., 100.
 Trimethylene chlorobromide, A., 1031.
 trithiocarbonate and dithiolcarbonate *o*-carboxyphenylhydrazide, and its methyl ester, A., 628.
 1:7-Trimethylenebenzthiazolin, 2-imino-, and 2-nitrosoimino-, A., 1076.
 1:7-Trimethylenebenzthiazolone, A., 1076.
 Trimethyleneglycol, production of, by bacteria, A., 1334.
 4:3':5'-Trimethyl-3-ethyl-5-bromoethylpyrromethene, 4'-bromo-, hydrobromide, A., 967.
 4:3':5'-Trimethyl-3-ethyl-4'-carboxyethylpyrromethene, 5-bromo-, hydrobromide, derivatives of, A., 968.
 4:3':5'-Trimethyl-4-ethylcarboxyethylpyrromethene, 5-bromo-, hydrobromide, and 5-hydroxy-, A., 1421.
 Tri-(γ -methyl- γ -ethyl- Δ^4 -pentinyl)acetic acid, A., 1392.
 Tri-(γ -methyl- γ -ethyl- Δ^4 -pentinyl)carbinol, A., 1392.
 3:5:3'-Trimethyl-4'-ethyl-4-propylpyrromethene hydrobromide, A., 240.
 4:3':5'-Trimethylethylpyrromethenes, dibromo-, hydrobromides, A., 101.
 Trimethylethylpyrromethenepropionic acids, and bromo-, hydrobromides of, A., 101.
 1:3:4-Trimethyl- γ -fructose, and its derivatives, A., 827.
 Trimethyl- δ -galactonolactone, A., 1276.
 2:3:4-Trimethyl δ -galactonolactone, phenylhydrazide of, A., 465.
 2:3:4-Trimethylgalactose, A., 465.
 Trimethyl- d -galactose, and its isopropylidene ether, A., 1276.
 Trimethylglucal, A., 1399.
 Trimethyl- d -glucodesonic acid, and its barium salt and lactones, A., 71.
 Trimethyl- d -glucodesose, A., 71.
 $\alpha\gamma$ -Trimethylglutaric acid, β -bromo- γ -hydroxy-, lactone of, A., 488.
 $\alpha\beta\gamma$ -Trimethylglutaric acids, A., 604.
 and their derivatives, and γ -cyano-, ethyl ester, A., 67.
 2:3:4-Trimethylglycuronic acid, A., 465.
 $\beta\beta\zeta$ -Trimethylheptane- $\beta\beta$ -diol, A., 1032.
 3:3:4-Trimethylcyclohexanone, and its derivatives, A., 1417.
 $\beta\gamma\epsilon$ -Trimethyl- Δ^4 -hexen- γ -ol, A., 466.
 Trimethyl-lævan, A., 827.
 2:3:6-Trimethylmannose-anilide, A., 939.
 1:3:4-Trimethylmethylfructoside, A., 827.
 Trimethyl- d -methylglucodesoside, A., 71.
 2:3:4-Trimethyl β -methylglycuronide, A., 465.
 Trimethylmethylriboside, A., 1399.
 2:3:4-Trimethylmucic acid, dimethyl ester, A., 465.
 Trimethylnaphthalene from Congo copal oil, oxidation of, A., 484.
 1:2:5-Trimethylnaphthalene, formation of, from squalene, A., 80.
 2:3:5-Trimethylnaphthalene, synthesis of, and its salts, A., 948.
 Trimethylnaphthalenes, synthesis of, and their salts, A., 80.
 Trimethyl- β -naphthaquinone, derivatives of, A., 484.
 1:2:5-Trimethyl- β -naphthaquinone, A., 80.
 Trimethyl- Δ^4 -nonen- ζ -ones, A., 714.
 1:5:5-Trimethylcyclopentane-2:4-dione-1-acetic acid, and its disemicarbazone, A., 358.
 3:3:4-Trimethylcyclopentanone, and its derivatives, A., 1397.
 $\beta\beta\delta$ -Trimethylpentenes, separation of, from diisobutylenc, A., 1148.
 2:4:6-Trimethylphenylbenzoic acid, 3:5-dibromo-, A., 348.
 2':4':6'-Trimethylphenyl-5-methyl-*p*-benzoquinone, and 3:6-dibromo-2:3'-bromo-, 3:6-dibromo-2:3'-bromo-5'-amino-, and 3:6-dihydroxy-2:3'-bromo-, and its salts, A., 1296.
 2':4':6'-Trimethylphenyl-5-methyl-*p*-benzoquinone-3:6-dieyanoacetic acid, and its ethyl ester, A., 1296.
 2':4':6'-Trimethylphenyl-5-methyl-*p*-benzoquinone-3:6-dimalonic acid, A., 1296.
 2':4':6'-Trimethylphenyl-5-methylquinol, and 3:6-dibromo-2:3'-bromo-, and their diacetates, and 3:6-dibromo-2:3'-bromo-5'-amino- and -5'-nitro-, A., 1296.
 2':4':6'-Trimethylphenyl-5-methylquinol-3:6-diacetic acid, 2:3'-bromo-, A., 1296.
 β -2:4:6-Trimethylphenylpropionic acid, A., 1292.
 Trimethylpropargyl alcohol, A., 618.
 Trimethylpropargyl ether and chloride, A., 618.
NNN'-Trimethylputrescine, and its chloroaurate, A., 718.
 Trimethylpyridines, and their salts, A., 630.
 3':4':5'-Trimethylpyrromethene, and 3:4:5-tribromo-, hydrobromides of, A., 967.
 4:3':5'-Trimethylpyrromethene-3:4'-dipropionic acid, 5-bromo- and 5-hydroxy-, derivatives of, A., 633.
 3:4:5-Trimethylpyrpyr-3':5'-dimethyl-4'-ethylpyrpyr-2:2'-ethan- α -one, A., 494.
 3:4:5-Trimethylpyrpyr-3':5'-dimethylpyrpyr-2:2'-ethan- α -one, A., 494.
 Trimethylribonolactone, A., 1399.
 2:3:4-Trimethylribose, A., 1399.
 Trimethyl- δ -saccharolactonic acid, methyl ester, A., 1040.
 Trimethylsuccinic acid, ethyl hydrogen ester, A., 1417.
 1:3:8-Trimethyl-5:6:7:8-tetrahydronaphthalene, A., 80.
 2:3:5-Trimethyl-1:2:3:4-tetrahydronaphthalene, A., 948.
 α -*NNN'*-Trimethyltetramethyleneammonium iodide, δ -iodo-, A., 718.
 Trimethylthionaphthen dyes, (P.), B., 152*.
 Trimethyluric acids, preparation of, A., 101.
 $\alpha\alpha\beta$ -Trimethylvaleric acid, and its lactone, A., 1270.
 $\beta\gamma\gamma$ -Trimethyl-*n*-valeric acid, δ -bromo-, and its ethyl ester, A., 1417.
 1:3:9-Trimethylisoxanthine, 8-nitroso-, A., 744.
 1:3:7-Trimethylxanthine-8-thiolacetic acid, and its sodium salt, A., 743.
 Trimethylxylose, action of dilute alkali on, A., 1037.
 Triocotin, metabolism of. See under Metabolism.
 Tri-*n*-octylphosphine, A., 1404.
 Trional, action of, on blood constituents, A., 260.
 Trioses, action of weak alkalis on, A., 713.
 Trioxides, crystal structure of, A., 897.
 Trioxymethylene, Raman spectrum of, A., 893.
 Tricyclopentadiene, additive compound of, with phenyl azide, A., 473.
 4:4':4''-Tri-(*p*-phenoxyphenyl)pararosamine hydrochloride, A., 350.
 Triphenylacethydroxamic acid, derivatives of, A., 221.
 Triphenylacetonitrile, and its oxide, A., 221.
 sulphate, A., 608.
 Triphenylbenzenylamidine, and *p*-trichloro-, A., 87.
 Triphenylbromomethane, hydrolysis equilibrium and free energy of reactions of, A., 308.
 $\alpha\beta\gamma$ -Triphenylbutyric acid, β -hydroxy-, A., 726.
 Triphenylcarbinol, electric moment of, A., 410.
 free energy of reactions of, A., 308.
 action of cyanoacetic acid on, A., 620.
 Triphenylchloromethane, electric moment of, A., 410.
 hydrolysis equilibrium and free energy of reactions of, A., 308.
 2:2:4-Triphenyl- Δ^3 -chromens, A., 1070.
 Triphenyldiethylpentaphosphine, A., 502.
 1:2:3-Triphenyldihydropyrrole, 5-hydroxy-, A., 849.
 Triphenyldimethylpentaphosphine, A., 502.
 Triphenyldi-*n*-propylpentaphosphine, A., 502.
 $\beta\beta\beta$ -Triphenylethyl methyl ketone, A., 1044.
as-Triphenylguanidine *hexasulphide*, A., 474.
 Triphenylmethane, cybotactic properties of, A., 1360.
 derivatives, constitution of, A., 349, 1051, 1052.
 Triphenylmethane, 2:4:2':4':2'':4''-hexanitro-, compound of, with crystal-violet base, A., 618.
 Triphenylmethane dyes, A., 632.
 reduction of, A., 480.
 perchlorates of, A., 350.
 Triphenylmethane-3:3'-dialdehyde, 4:4'-dihydroxy-, bisphenylhydrazine, and its benzoyl derivative, A., 957.
 Triphenylmethyl, reaction of, with magnesium and magnesium iodide, A., 79.
 derivatives, constitution of, A., 840.
 salts, quinonoid structure of, A., 86.
 chloride, action of silver fulminate on, A., 221.
 reaction of, with *p*-dianilinobenzene, A., 955.
 with α -methyl-*d*-glucoside, A., 1149.

- Triphenylmethyl hydrogen peroxide, A., 839.
thionitrite, A., 821.
- N*-Triphenylmethylmalonic acid, A., 620.
- Triphenylmethylphosphinic acid, A., 820.
- 1:2:3-Triphenylnaphthalene, constitution of, and its di- and tetra-hydro-derivatives, and 4-iodo-, A., 948.
- Triphenylphosphine dichloride, and its magnesium derivatives, A., 502.
- $\alpha\beta\beta$ -Triphenylpropionic acid, α -hydroxy-, ethyl ester, A., 354.
 β -hydroxy-, A., 726.
- $\beta\beta\beta$ -Triphenylpropionic acid, methyl ester, A., 956.
- $\beta\beta\beta$ -Triphenylpropionic acid, α -cyano-, synthesis and structure of, A., 620.
- 3:4:4-Triphenylisopyrazole, A., 956.
- 1:2:3-Triphenyltetrahydropyrrole, 2-cyano-5-hydroxy-, A., 849.
- 4:4':4''-Tri-(*p*-phenylthiolphenyl)pararosaniline hydrochloride, A., 350.
- Tri-*n*-propyl sulphide, A., 472.
- Tri-*n*-propylarsine, salts of, A., 472.
- Tri-*n*-propylbismuthine, A., 609.
- Tripropyltrimethylenetetramine, salts of, A., 966.
- Tripyrranes, synthesis of, A., 968.
- Tripyrrylmethane, A., 739.
- s*-2-Triquinolylmethane, tautomerism of, A., 1234.
- Trisazo-dyes, manufacture of, (P.), B., 1134.
for cotton, manufacture of, (P.), B., 386.
direct, manufacture of, (P.), B., 435.
- Tris- $\alpha\alpha'$ -dipyridylargentic salts, A., 234.
- Tris- $\alpha\alpha'$ -dipyridylnickelous salts, A., 1168.
- Tris- α -dithienylbisindoxyl, and its derivatives, A., 104.
- Trisulphonylmethanes, A., 1394.
- Tritetraphenylmethanes, aminohydroxy-, and hydroxy-, A., 840.
- Trithiazyl trichloride, A., 1254.
- Tri-*p*-toluic acid, tri-3-hydroxy-, glyceryl ester, A., 1054.
- Tri-*p*-tolylbenzenylamidine, A., 87.
- Tri(triphenylmethyl)uranose, A., 1149.
- "Trochisci santonini," determination of santonin in, B., 611.
- Troostite, nodular, structure of, B., 1053.
- Tropine, action of β -phenylpropionic acid on, A., 1076.
- Tropitoides, synthesis of, and its hexa-acetate, A., 1400.
- γ -Truxillic acids, esters of, A., 88.
- γ -Truxillic acid, hydrogen esters of, and their resolution, A., 88.
- Trypaffavin, action of, on metabolism, A., 516.
hypoglycæmic action of, A., 872.
- Trypanocidal action and chemical constitution, A., 106.
and toxicity to enzymes, A., 1188.
- Trypanosoma evansi*, resistance and blood-sugar in infection by, A., 865.
- Trypanosomes, effect of infection with, on blood of rats, A., 383.
- Trypanosomiasis, curative action of elements in, A., 865, 1181.
- Trypsamide. See Anilinoacetamide-4-arsinic acid, sodium salt.
- Trypsin, preparations of, for prevention of adhesions, A., 252.
action of light on, A., 1456.
complexity of, A., 1191.
homogeneity of solutions of, A., 766.
testing activity of solutions of, A., 874.
hydrolysis of polypeptides by, A., 767.
influence of serum on, A., 754.
action of, on monoamino-acids, A., 1331.
evaluation of preparations of, A., 766.
- Trypsin-kinase, action of light on, A., 1456.
inactivation of, by heat, A., 766.
hydrolysis of polypeptides by, A., 124, 767, 768.
- Tryptase, end-point of action of, A., 521.
in leucocytes, A., 1174.
- Tryptophan from caseinogen, A., 392.
anabolic action of, A., 385.
as hæmatogenic amino-acid, A., 109.
metabolism of. See under Metabolism.
determination of, A., 1079, 1439.
in crude proteins, A., 255.
- Tryptophol, synthesis of, A., 97.
- Tsuga heterophylla*, oils from leaves of, B., 274.
- Tubaic acid, relation of optical activity of rotenone derivatives to structure of, A., 1298.
- Tubes, removal of external scale from, (P.), B., 826.
heat transmission from, B., 1125.
heat transfer and pressure drop in empty, baffled and packed, B., 949.
boiler. See Boiler tubes.
- Tubercle virus, filtrates of, A., 986.
- Tuberculin, purification of, A., 266.
colloidal constituents of, A., 1336.
determination of, A., 1325.
- Tuberculo-proteins, toxic properties of, A., 656.
- Tuberculosis, A., 526.
chemotherapy of, A., 760.
pathogenesis of, A., 1325.
active principle of, A., 1336.
blood-proteins in, A., 1325.
copper content in, A., 254.
creatinuria in, A., 865.
enzymes in urine in, A., 1193.
calcifying action of irradiated ergosterol in, A., 659.
accumulation of iron in, A., 1325.
proteins in plasma in, A., 254.
pulmonary, effect of administration of irradiated ergosterol on blood serum-calcium in, A., 383.
haemoglobin resistance in, A., 865.
- Tubing, rubber. See Rubber tubing.
- Tumours, effect of arginine, thyroxine, and vitamin-B on growth of, A., 253.
proteolysis of, A., 1180.
vitamins in relation to growth of, A., 253.
fat-soluble vitamins in, A., 510.
metabolism in, A., 253, 1180.
effect of sodium chloride on, A., 1324.
immunity to, A., 1323.
anti-bodies for, A., 976.
chicken, cause of, A., 645.
inhibitive principle in, A., 1180.
epithelial, effect of testicle extract and serum on, A., 382.
experimental, effect of fermentation poisons on, A., 510.
malignant, effect of arsenic and hydrocyanic acid on respiration of, A., 1445.
carbohydrate metabolism in, A., 1445.
lipin content of, A., 1445.
human, proteases of, A., 1445.
mice, effect of arginine and thyroxine on, A., 760.
- Tung oil, polarisation and electric moment of, A., 786.
polymerisation and isomerisation of, B., 767.
cooking of, B., 1060.
coagulation and analysis of stand oils containing, B., 894.
 β -elæostearin from, B., 549.
combination of, with phenol-formaldehyde resins, (P.), B., 1019.
rhodanometry of, A., 602.
coagulated, re-liquefaction of, B., 894.
- Tung oil seeds, Chinese, B., 30.
- Tungsten, atomic weight of, A., 1208.
production of, (P.), B., 28, 980, 1103.
electrodeposition of, from aqueous solutions, B., 930.
isotopes of, A., 15, 1208.
metallography of, B., 888.
films, structure and specific resistance of, A., 792.
oxygen films on, A., 782.
electron diffraction by, A., 278.
sealing of, into glass, (P.), B., 1015.
Peltier effect at junctions of molybdenum and, A., 44.
recovery of, (P.), B., 1102.
use of, in moulding appliances, B., 25.
incandescent, action of, on oxygen and water vapour, A., 1377.
thoriated, activation of, A., 994, 1347.
- Tungsten alloys for cutting tools, etc., (P.), B., 725.
with chromium and cobalt, (P.), B., 1103.
with cobalt, for cutting tools, (P.), B., 28, 1103.
with rhenium, melting points of, A., 676.
- Tungsten compounds, quinquivalent, complex bromine derivatives of, A., 447.
- Tungsten arsenide and phosphide, A., 809.
carbide, manufacture of, (P.), B., 62.
manufacture of alloys of, (P.), B., 932, 1015.
coating of, with cobalt, (P.), B., 633.
cementation of, B., 161.
cobalt alloys with, (P.), B., 302, 639, 932.
oxytetrachloride, A., 1382.
hexafluoride, physical constants of, A., 553.
oxide, violet, A., 447.
trioxide, crystal structure of, A., 1115.
oxides, lower, preparation and structure of, A., 583.

Tungsten:—

- Tungstic acid, colloidal, sols, A., 1123.
 - adsorption of silver ions by, A., 797.
- Tungstates, aggregation of ions in solutions of, A., 448.
 - complex acid, A., 923.
- Tungsten determination:—
 - determination of, colorimetrically, A., 589.
 - microchemically, A., 990.
 - with tetramethyldiaminodiphenylmethane, A., 1386.
- α - and β -Tungsten, preparation of, electrolytically, A., 805, 1377.
- Tungsten filaments, heated, positive ions from, A., 11.
 - thoriated, (P.), B., 165.
 - hot, reactions of gases at surface of, A., 576.
- Tungsten minerals, fluorescence of, A., 817.
- Tungsten ores, removal of arsenic from, (P.), B., 847.
- Tungsten powder, crystal formation in, A., 447.
- Tungsten tubes, refractory, manufacture of, (P.), B., 497.
- Tungsten wire, welding of, to nickel wire, (P.), B., 765.
 - glowing, burning out of, A., 1106.
- Turanose, A., 1149.
- Turbidimeters, A., 451.
- Turbidity of coloured solutions, A., 906.
 - photo-electric determination of, A., 1387.
- Turbines, mercury-steam, B., 181.
 - steam, lubrication of, (P.), B., 522.
 - preheater and degasifying plant for, (P.), B., 704.
- Turbine oils, B., 142.
 - production of, B., 429.
- Turf, artificial, manufacture of, (P.), B., 735.
- Turkey-red, dyeing with, B., 437.
- Turkey-red oil, preparation of, B., 355.
 - analysis of, B., 501.
- Turnips, effect of ammonium sulphate on field germination of, B., 857.
 - composition and digestibility of, B., 1071.
- Turnip tops, effect of washing of, before or after ensilage, B., 609.
- Turpentine, production of, from pines, B., 895.
 - from materials rich in oleoresin, (P.), B., 984.
 - composition of, B., 502.
 - composition of alcoholic fraction of, B., 259.
 - substitutes for, (P.), B., 1018.
 - use of white spirit as substitute for, B., 450.
 - from *Pinus sylvestris*, composition of, B., 259.
 - sesquiterpene from, and its dioxide, A., 492.
 - Philippine, from *Pinus insularis*, B., 768.
 - Polish, B., 1106.
 - Russian, manufacture of terpinol from, B., 259.
 - Spanish, B., 1106.
 - detection of quality of, B., 1018.
 - determination of vapour of, in air, B., 308.
- Turpentine oil, B., 402.
 - utilisable products from distillation residues of, (P.), B., 357.
 - conversion of, into heavier oils, (P.), B., 818.
 - oxidation of, B., 768.
 - evaluation of, B., 402.
 - iodine value of, B., 502.
- Tutocaine, amyostatic action of, A., 764.
- Tutton's salts, structure of, A., 1001.
- Twitchell reagent, B., 399, 499, 551, 982.
- Type metal, properties of, B., 299.
- Typhoid fever, metabolism of, A., 1448.
- Typhoidin, A., 503.
- Tyramine. See β -Phenylethylamine, *p*-hydroxy-.
- Tyres, manufacture of, from artificial rubber, (P.), B., 770.
 - rubber, manufacture of, (P.), B., 358.
 - value of softeners in, B., 864.
 - scrap, recovery of rubber and cotton from, B., 730.
- Tyrosinase, preparation and determination of, A., 1332.
 - nature of, A., 983.
 - specificity of, A., 765.
 - from *Dolichos*, irradiation of, A., 261.
- Tyrosine from caseinogen, A., 392.
 - fate of, in the organism, A., 1185.
 - detection of, A., 108.
 - determination of, A., 1439.
 - by Folin-Looney method, A., 375.
 - in crude proteins, A., 255.
 - specificity of phenol reagent for, in proteins, A., 375.
- Tyrosine, diiodo-, influence of, on hyperthyreotic metabolism, A., 885.

- dl*-Tyrosines, derivatives of, A., 768.
- d*-Tyrosine, 3:5-diiodo-, from the thyroid, A., 1178.
- l*-Tyrosine, esters of, A., 768.
- Tysonite, magnetic rotation of, A., 286, 287.
 - optical anisotropy of, A., 287.
 - crystal structure of, A., 1002.

U.

- Udilo seed oil, B., 355.
- Ulcers, peptic, acid-base equilibrium in, A., 382.
- Ultra-centrifuge, A., 1027.
- Ultra-filters, size of pores of, A., 795.
- Ultrafiltration, B., 227.
- Ultramarine, structure of, A., 1380.
- Ultra-violet light. See Light, ultra-violet.
- Umbers, mineral, non-fastness to oil of, B., 450.
- Δ^4 -Undecenoic acid, action of chlorosulphonic acid on, A., 824.
- Δ^6 -Undecene, A., 61.
- Δ^4 -Undecinoic acid, triacetoxymercuri-derivative, A., 65.
- Undecic acid, ι -chloro- κ -hydroxy-, and κ -thiol-, and its disulphide, A., 824.
- Undecyl hydrogen peroxide, α -hydroxy-, A., 1268.
- 2-*n*-Undecylbenzimidazole, A., 601.
- p*-Undecyltoluene, A., 1158.
- 4-*n*-Undecyl-*p*-toluquinone, and 2:5-*di*hydroxy-, A., 1158.
- Undeplogondiacidic acid, derivatives of, A., 1297.
- Universe, mass of, A., 279.
- Unsaturated compounds, A., 232.
 - absorption spectra of, A., 1352.
 - valency tautomerism of, A., 92, 1305.
 - double linking in, A., 82.
 - polymerisation of, (P.), B., 333.
 - oxidation of, A., 1150.
 - reduction of, with titanous chloride, A., 233.
 - action of diazonium salts on, A., 722.
 - condensation of, with diazomethane, A., 1310.
 - Friedel-Crafts reaction with, A., 1412.
 - formation of additive compounds of, A., 1043, 1155, 1391.
 - addition of ψ -acids to, A., 1391.
 - addition of halogens and hydrogen halides to, A., 1391.
 - conjugated, A., 238, 491, 492, 1067, 1273, 1413.
 - modes of addition to, A., 1391.
 - isomeric, determination of mixtures of, A., 935.
- Unsaturation, effect of, on heat capacity, entropy and free energy, A., 42.
 - organic, determination of, A., 193.
- Uracil, and its derivatives, ultra-violet absorption spectra of, A., 1308.
 - action of ozone on, A., 632.
 - oxidation of, in the body, A., 121.
- Uracil-4-aldehyde diethylacetal, A., 851.
- Uracil-4(6)-carboxylic acid. See Orotic acid.
- Uranine, polarised fluorescence of, A., 22.
- Uraninite, from Placer de Guadalupe, A., 817.
- Uranium, isotopes of, A., 15, 1349.
 - L*-series spectrum of, A., 889.
 - X-ray tube for production of homogeneous K-rays of, A., 191.
 - crystal structure of, A., 413.
- Uranium alloys with mercury, A., 1377.
 - with molybdenum, manufacture of, (P.), B., 121.
- Uranium bases (*uraniumammines*), A., 1382.
- Uranium nitrate, effect of injection of, on tissues, A., 386.
 - oxide, preparation of, and determination of its saturation current, A., 923.
 - Uranyl nitrate, equilibrium of ether, water, and, A., 160.
 - anhydrous, dissociation pressure of, A., 170.
 - sulphate, paramagnetism of ions of, A., 291.
- Uranium determination:—
 - determination of, A., 1026.
 - electro-volumetrically, with ceric sulphate, A., 927.
 - in presence of formic acid, A., 1282.
- Uranium II, half-life period of, A., 15.
- decay constant of, A., 891.
- Uranium-Z, A., 1208.
- Uranium-lead, atomic weight of, from Swedish holm, A., 279.
- Uranium-vanadium compounds, complex, A., 917.
- Urazole, dithio-, Freund's, constitution of, A., 369.

- Urea (carbamide)**, formation of, in the body, A., 869.
 production of, in the organism, A., 868.
 solutions of, as culture media, A., 875.
 hydrolysis of, by urease, A., 768.
 reaction of, with urease and gelatin, A., 983.
 decomposition of, by *Proteus*, A., 876.
 in soils, A., 769; B., 987.
 in higher plants, A., 990.
 glomerular elimination of, in frogs, A., 863.
 excretion of, in man, A., 509.
 condensation products of formaldehyde and, (P.), B., 853.
 ingested, effect of, on nitrogen metabolism, A., 762.
 determination of, microchemically, A., 538.
 in blood and urine. See under Blood and Urine respectively.
- Urea stibamine**, commercial, composition of, A., 751.
- Urease**, A., 875.
 preparation of, from soya-bean flour, A., 759.
 chemical nature of, A., 521.
 action of protease on, A., 393.
 hydrolysis of urea by, A., 768.
 reaction of, with urea and gelatin, A., 983.
 crystalline, toxicity of, A., 1191.
 in the organism, A., 1456.
 detection of, microchemically, in tissues, A., 250.
- Ureides**, isolation of, from petroleum, A., 1397.
 in higher plants, A., 990.
- Urethane**, analgesic range of, A., 1453.
- Urethanes**, A., 830.
 eserine-like action of, A., 650.
- Uric acid**, A., 976.
 formation of, in birds, A., 515.
 distribution of, in blood, A., 858.
 distribution and determination of, in blood, A., 973.
 use of active charcoal as catalyst in autoxidation of, A., 101.
 decomposition of, by charcoal preparations, A., 1075.
 and its derivatives, action of bacteria on, A., 1459.
 action of blood on, A., 506.
 effect of cinchophen derivatives on excretion of, in bile, A., 1328.
 decomposition of, by liver cells, A., 1090.
 excretion of, A., 1082.
 influence of emetics on, A., 871.
 effect of santonin on, A., 764.
 solubility of, in urine, A., 645.
 in infants' urine, A., 113.
 detection of, in blood-serum and cerebrospinal fluid, A., 858.
 determination of, A., 978.
 in blood and urine. See under Blood and Urine respectively.
- Uricase**, kinetics of action of, A., 1090.
 in edible plants, A., 132.
- Urine**, composition and acid-base equilibrium in, A., 644, 1444.
 composition of calculi of, A., 864.
 formation of, in frogs' kidneys, A., 112.
 effect of diet on excretion of, A., 1086.
 amylase in, A., 1189.
 bile pigment in, A., 381.
 high carbon in, in hepatic disease after administration of menthol, A., 645.
 solubility and dissociation of carbon dioxide in, A., 509.
 effect of respiratory rate on excretion of chlorides and water in, A., 758.
 effect of diet on creatinine in, A., 1085.
 distribution between dextrose and lactose in, A., 1322.
 glycogen in, A., 758.
 glyoxaline derivatives in, in liver disease, A., 645.
 sexual hormone in, during menstrual cycle, A., 878.
 in pregnancy, A., 1195.
 insulin in, A., 1194.
 incidence of lipins in, A., 758.
 mercury in, A., 1088.
 methylamine in, A., 1185.
 distribution of nitrogen in, A., 1086.
 pigments in, A., 863.
 porphyrin in, after ingestion of chlorophyll, A., 757.
 fermentable sugar in, A., 1443.
 solubility of uric acid in, A., 645.
 containing mucin, A., 758.
 ether reaction of, A., 976.
 animal and human, hormonal pregnancy reaction of, A., 878.
 of domestic animals, phenaceturic acid in, A., 1450.
 of sucking calves, nitrogenous constituents of, A., 255.
- Urine of cattle**, influence of feeding-stuffs on acid-base balance of, A., 257.
 dog's, ethyl sulphide in, A., 976.
 human, substance resembling anterior pituitary extract in, A., 527.
 dimethyl diketone, acetylmethyl carbinol and β -butylene glycol in, A., 1322.
 determination of allantoin in, A., 976.
 infants', uric acid in, A., 113.
 of Malayan natives, creatinine in, A., 378.
- Urine**, analytical methods relating to:—
 p_{H} values in analysis of, A., 1082.
 use of tropeolin-OO in titration of organic acid in, A., 509.
 detection in, of acetoacetic acid and acetone, A., 252, 381.
 of acetone, A., 758.
 of acetone substances, A., 1443.
 of bilirubin, A., 863.
 of lactose, A., 644, 1444.
 of phenol, A., 1082.
 detection and determination of ammonia and amino-acids in, A., 113.
 detection and determination of indican in, A., 1082.
 detection and determination of lactose in, A., 1179.
 determination in, of acetone, photometrically, A., 1082.
 of acids, A., 381.
 of ammonia, A., 1444.
 of fixed bases, calcium and sulphate, A., 1444.
 of fixed bases, sodium and potassium, A., 1444.
 of bile acids, A., 381.
 of bile salts, A., 1322.
 of bromine, A., 538.
 of C:N-quotient, A., 644.
 of calcium and magnesium, A., 1444.
 of dextrose, microchemically, A., 939.
 precipitation agent for, A., 1179.
 of homogentisic acid, iodometrically, A., 113.
 of p_{H} , colorimetrically, A., 134.
 of iodine, microchemically, A., 538.
 of lead, A., 518, 863.
 of nitrogen, A., 1323.
 of nitrogen in oxyproteic fraction, A., 758.
 of organic acids, A., 1082.
 of oxycinchophen, A., 1084.
 of phenols, colorimetrically, A., 1322.
 of phosphorus, photometrically, A., 1323.
 of potassium, A., 134.
 of proteins, A., 863, 976.
 of purine bases, A., 509.
 of salicylic acid, A., 1452.
 of sugar, A., 252, 1444; (P.), B., 654.
 with "glucophot," A., 976.
 of urea, A., 1180, 1444.
 of uric acid, A., 134.
 colorimetrically, A., 1444.
 of urobilin, A., 509, 863.
- Urobilin**, and its derivatives, fluorescence spectra of, A., 1443.
 excretion of, in bile and urine, A., 114.
 substances, A., 1181.
 determination of, with the step-photometer, A., 778.
 in urine, A., 509, 863.
- Urobilinogen**, origin of, A., 381.
 elimination of, in health and disease, A., 864.
 determination of, with the step-photometer, A., 778.
- Urochrome**, A., 645.
 origin of, A., 514.
- Uronic acids** in soils, B., 409.
 compound, A., 465.
- isoUroporphyrin II octamethyl ester**, cobalt salt, A., 633.
- Uroselectan**, A., 870.
- Ursanic acid**, and its methyl ester, A., 1154.
- Ursodeoxycholic acid**, and its derivatives, A., 957.
- Ursolic acid**, and its derivatives, A., 491, 1154.
- Ursonic acid**, derivatives of, A., 1154.
- Ustilago avenæ**. See Oat smut.
- Uterus**, effect of anterior pituitary hormone on growth of, A., 1461.
 antagonism of drugs in action on, A., 1328.
 human, choline in, in relation to labour, A., 379.

V.

- Vaccines, vacuum drying and storage of, (P.), B., 91.
 auto-, culture of bacteria for, (P.), B., 1122.
 bouillon-filtrate, for *Staphylococcus*, A., 877.
- Vacua, high, production and measurement of, B., 657; (P.), B., 1031.
 low, pressure control apparatus for, A., 329.
- Vacuum apparatus, oven, A., 815.
- Vacuum regulators, A., 1027.
- Vacuum tubes, sealing of glass to metal in, (P.), B., 595.
 decomposition of iron oxide in, (P.), B., 593.
- Vagotomin, action of, on blood-sugar and liver-glycogen, A., 657.
- Valency, A., 784.
 and symmetry, A., 1356.
 directed, in polyatomic molecules, A., 548.
 orbital, A., 548.
 variable, A., 547.
- Valeraldehyde, oxidation of, in air, A., 1372.
- p*-isoValeramidobenzoic acid, α -bromo-, ethyl ester, A., 220.
- isoValeranilide, *p*-bromo-, preparation of, A., 613.
- isoValeric acid, sparteine ester, A., 1076.
- isoValeric acid, α -bromo-, preparation of, A., 821.
- Valeric acids, extraction of, from aqueous solution with light petroleum, A., 1270.
 glyceryl esters, A., 1269.
o-phenylacetamidophenyl esters, A., 615.
- n*-Valeric acids, α -amino-, benzoyl derivatives. See Benzoyl*nor*-valines.
- $\alpha\beta$ -hydroxy-, and their derivatives, A., 1279.
- Valerophenones, *m*-amino- and bromo-, and their derivatives, and 4-bromo-3-nitro-, A., 1314.
- Valero- β -veratrylethylamide, δ -bromo- and δ -chloro-, A., 365.
- n*-Valeryl bromide, A., 1315.
- isoValeryl chloride, molecular compound of, with *p*-benzeneazophenol, A., 613.
- n*-Valerylcholine chloroplatinate, A., 943.
- isoValeryl-*l*-menthylamine, A., 229.
- Valine, hydroxy-, dissociation constant of, A., 1233.
- Valonia, p_H and r_H of sap and protoplasm of, A., 272.
 penetration of dyes into sap of, A., 534.
 accumulation of electrolytes in cells of, A., 129.
- Valonia *utricularis*, gas in, A., 1099.
- Valves, effect of secondary emission on characteristics of, A., 785.
 measurement of inter-electrode grid-plate capacity of, A., 23.
 diaphragm, A., 1027.
 electrolytic. See Electrolytic valves.
 thermionic, A., 1387; (P.), B., 1104.
 cathodes for, (P.), B., 683, 1104.
 high-emission cathodes for, (P.), B., 304.
 for potentiometers, A., 43, 1144.
 high vacua in, (P.), B., 1031.
 multiple-electrode, cathodes for, (P.), B., 726.
- dl*-Valyl-*l*-histidine, A., 1191.
- Vanadinite, A., 817.
 partial substitution of lead halide by chromate in, A., 1021.
- Vanadium in Chibing, A., 1266.
 in Spanish rocks and minerals, A., 60.
 recovery of, from ores, etc., (P.), B., 548.
 electrolytic reduction of acid solutions of, A., 178.
 equilibria of iron, carbon and, B., 807, 808.
 catalytic, composition of, (P.), B., 62.
 surface adsorption on, B., 487.
 ionised, spectrum of, A., 6.
- Vanadium alloys with iron and carbon, A., 297.
 with mercury, A., 1377.
- Vanadium chlorides and oxides, action of magnesium phenyl bromide on, A., 1405.
 hydride, crystal structure of, A., 413.
 Vanadyl salts, reduction of peroxydisulphates by, A., 1245.
 Vanadous salts, A., 178.
 Vanadates, A., 1021.
- Vanadium detection and determination :—
 detection of, A., 1386.
 determination of, in ores and alloys, B., 299.
 in steel, B., 928, 1054.
- Vanadium ores, smelting of, (P.), B., 28.
 containing lead, treatment of, (P.), B., 1010.
- Vanilla sugar, detection of, B., 222.
- Vanillin, manufacture of, B., 57, 1132.
 from peat, etc., (P.), B., 475.
 transmission spectrum of, B., 222.
 solubility of, in ethyl alcohol, A., 558.
 complex metallic salts of, A., 485.
 detection of, microchemically, A., 925.
- Vanillin, 2-chloro-, and its derivatives, A., 90.
- isoVanillin, bromo-, A., 479.
- Vanillins, *mono*-, *di*-, and *tri*-chloro-, chloroamino-, *mono*- and *di*-chlorobromo-, and chloronitro-, and their derivatives, A., 90.
- Vanillylidenebis(dihydro- β -naphthafuran- γ -one), A., 737.
- Vanillylidenethiohydantoin, A., 1170.
- Vapours, condensation of, B., 1.
 separation of, from gases, (P.), B., 911, 1079.
 See also Gases.
- Vapour pressure, A., 793; B., 227.
 measurements of, A., 1004.
 diagram for, A., 553.
 equations for, A., 554.
 standard for determinations of, A., 155, 156.
 and heat of dilution, A., 433, 566.
 and polarity, A., 1222.
 of aqueous solutions, A., 975.
 of hydrocarbons, A., 417.
 of liquids, A., 564.
 of mixed liquids, A., 900.
 of organic liquids, A., 294.
 of solids, calculation of, from solubility, A., 793.
 small, measurement of, A., 295.
- Varnishes, manufacture of, (P.), B., 451, 686.
 from xylose and aniline, B., 851.
 treatment of fumes from, (P.), B., 1107.
 detection of metals used in, B., 451.
 evaporation in drying of films of, B., 308.
 solubilities of organic constituents of, in methyl borate, B., 983.
 "blooming" of, B., 33, 126.
 measurement of abrasion resistance of, B., 308.
 photochemical embrittling test for prediction of durability of, B., 895.
 oxygen absorption and skin formation of, B., 210.
 use of azo-dyes in, (P.), B., 580.
 bases for, (P.), B., 261.
 camphor white oil as thinner for, B., 851.
 pitches for, B., 1146.
 glass colour standards for, B., 451.
 manufacture of esters for, (P.), B., 819.
 application of, to metal surfaces, (P.), B., 73.
 for coatings, (P.), B., 405.
 photomicrographs of novelty finishes with, B., 260.
 resistance of, to tackiness, when applied to cedar-lined interiors, B., 33.
 acid-resistance of, on phosphatised iron sheets, B., 1062.
 effect of ageing and weathering on films of, B., 851.
 exposure tests on, B., 260.
 accelerated weathering tests on, B., 260.
 manufacture of removers for, (P.), B., 127, 170, 1106.
 cellulose, production of, (P.), B., 261.
 crystallising, (P.), B., 818.
 electrical-conducting, (P.), B., 503.
 insulating. See Insulating varnishes.
 linseed oil, for leather, chemistry of formation and drying of, B., 817.
 matt, B., 126.
 nitrocellulose, measurement of viscosity of, B., 728.
 non-penetrative, production of, (P.), B., 73.
 oil, baking process of, B., 126.
 "blooming" of, B., 768.
 phenol resinoids in, B., 127.
 phenol-aldehyde resin, manufacture of, (P.), B., 769.
 phenolic resin, viscosity increase and gelation of, on cooking, B., 851.
 pyroxylin, (P.), B., 405.
 synthetic resin, (P.), B., 597, 686, 729, 1107.
 urea-formaldehyde, (P.), B., 597.
 water-resistant, (P.), B., 452.
- Vaseline, X-ray structure of, A., 152.
- Vats, prevention of frothing in, (P.), B., 703.
- Vateria *indica*, from India, kernels of, B., 31.
- Vegetables, carbon dioxide storage of, B., 178.
 carotenoid content of, A., 885.

- Vegetables, vitamins in, B., 944.**
 vitamin-B in, A., 1463.
 autocatalysis in, in various gases, A., 773.
 preservation of, (P.), B., 741, 1073.
 preparation of, for market, (P.), B., 1026.
 fresh, analyses of, B., 364.
 German, vitamin-C in, B., 903.
 green, determination of copper in, colorimetrically, B., 43.
 leafy, distribution of vitamin-B in, A., 270.
 preserved, coloration of, green, (P.), B., 44.
 maintenance of vitamins in, (P.), B., 653.
 root, vitamin-B in, A., 1196.
 determination of silica in, A., 1201.
- Vegetable juices, titration curves of, A., 775.**
- Vegetable materials, dehydration of, (P.), B., 44*.**
 distillation of, (P.), B., 958.
 heat treatment of, (P.), B., 143.
 preservation of, (P.), B., 610.
 manufacture of soluble ethers from, (P.), B., 582.
- Vegetable products, decomposition of, catalytically, A., 822.**
 aromatic, treatment of, (P.), B., 782.
- Vegetarians, basal metabolism of, A., 1084.**
- Velocity constants, calculating and averaging of, A., 802.**
- Velocity of adsorption and promoter action, A., 421.**
- Velocity of crystallisation of supercooled liquids and solids, A., 672.**
- Velocity of diffusion of strong electrolytes in solution, A., 1122.**
- Velocity of polymerisation, A., 45.**
- Velocity of reaction, A., 688.**
 statistical treatment of data for, A., 571.
 relation of, to concentration and activity, A., 1239.
 to surface and agitation, A., 1242, 1373.
 and affinity, A., 915.
 and molecular attractive forces, A., 315.
 in solution, A., 690.
 chain, A., 688.
 ionic, A., 175, 573.
 unimolecular, A., 1014, 1130.
- Velocity of solution of granular solids, A., 1373.**
- Velocity of sound. See under Sound.**
- Velocity of vaporisation, acceleration of, by colloids, A., 906.**
- Venus, atmosphere of, A., 1209.**
- Veramon, X-ray structure of, A., 1219.**
- Veratrole, derivatives of, A., 226, 1056.**
- Veratrole-5-sulphinic acid, and 4-bromo-, A., 628.**
- Veratrole-5-sulphonamide, 4-bromo-, A., 628.**
- N-Veratryl- β -3-bromo-4-methoxyphenylethylamine, 2-nitro-, A., 1077.**
- β -Veratrylethylamine hydrobromide, A., 365.**
- Veratrylthioanisylamine, and -veratrylamine, A., 1048.**
- Veratrylidenehomo-anisylamine and -veratrylamine, A., 1048.**
- Veratrylidene- β -phenylethylamine, A., 1048.**
- Veratryl- β -phenylethylamine, A., 1048.**
- ψ -Verdoporphyrin, dimethyl ester, A., 1433.**
- Vermin-killers, (P.), B., 92, 180, 908.**
- Veronal, ultra-violet absorption spectrum of, A., 784.**
 dissociation constant of, A., 910.
 analgesic range of, A., 1453.
- Veronalides, A., 966.**
- Vessels, lining of, (P.), B., 183*.**
 pressure, unfired, B., 465.
 proof against atmosphere and chemicals, manufacture of, (P.), B., 3, 141.
- Vesuvianite, crystal structure of, A., 1116.**
- Viburnum, A., 778.**
- Vicia faba, perfume of, as cause of favus, A., 253.**
- Villard effect, A., 1378.**
- Vines, effect of phosphates on growth of, B., 647.**
 photosynthesis in species of, A., 660.
 in Michigan, fertilisers and soils for, B., 898.
- Vinegar, manufacture of, (P.), B., 903.**
 addition of ammonium salts to, B., 511.
 vitamin content of, B., 314.
 analysis of, polarographically, with dropping mercury electrode, B., 218.
- Vinyl alcohol, polymerisation of, A., 1032.**
 ethers, manufacture of, (P.), B., 385.
 polymerised, manufacture of, (P.), B., 1132.
- Vinyl alcohols, polymerised, production of condensation products of, (P.), B., 170.**
- Vinyl arsinosulphide, β -chloro-, A., 1404.**
 bromide, addition of hydrogen bromide to, A., 598, 1031, 1393.
 chloride, manufacture of, from ethylene dichloride, (P.), B., 917.
 pure, (P.), B., 1040.
 production of α -polymeride of, (P.), B., 666.
 compounds, polymerisation of, (P.), B., 666.
 prevention of, (P.), B., 621.
 esters, production of, (P.), B., 1003.
 manufacture of neutral polymerisation products from, (P.), B., 73.
 halides, production of, (P.), B., 334, 875.
- o*-Vinylacetylenylbenzene, *o*- α -bromo-, A., 946.**
- Vinylacrylic acid, hydrogenation of, catalytically, A., 719.**
- β -Vinylacrylic acid, halogenohydrins of, A., 1148.**
- Vinylarsines, β -chloro-, interaction of, with benzene, in presence of aluminium chloride, A., 944.**
- α -Vinylcinnamic acid. See α -Benzylidene- $\Delta\beta$ -butenoic acid.**
- 7-Vinyl-7:12-dihydrobenzophenarsazine, 7- β -chloro-, true constitution of, A., 372.**
- 2-Vinyl-8-methoxy-9:10-methylenedioxyphenanthrene, and its derivatives, A., 749.**
- Vinylnaphthalenes, manufacture of polymerisation products of, (P.), B., 1004.**
- 6-Vinylphenarsazine, 6- β -chloro-, true constitution of, A., 372.**
- 2-Vinylthiolanthraquinone, 1-amino-2- β -chloro-, A., 749.**
- Viola tricolor*, xanthophyll of, A., 491.**
- Violaxanthin, A., 491, 1305.**
- Viosterol, effect of, on healing of rickets, A., 881.**
- Virus, sub-visible, determination of size of, A., 1095.**
- Visammidin, A., 885.**
- Visammin, A., 885.**
- Viscogen. See Saccharic acid, calcium salt.**
- Viscose, B., 107.**
 manufacture of, B., 341; (P.), B., 242, 532, 799.
 for manufacture of artificial silk, (P.), B., 481.
 recovery of waste soda from, B., 340; (P.), B., 1009.
 recovery of sodium sulphate from spinning baths for, B., 387.
 maintaining composition of precipitating baths for, containing magnesium sulphate, (P.), B., 968.
 manufacture of solutions of, (P.), B., 836.
 complex of, with sodium phosphate, (P.), B., 388.
 production of filaments, etc. from, (P.), B., 582.
 manufacture of coloured filaments, etc. from, B., 485.
 production of artificial silk from, (P.), B., 481.
 manufacture of dull lustre artificial silk from, (P.), B., 534.
 manufacture of artificial threads from, (P.), B., 626.
- Viscosimeters, (P.), B., 571, 789, 955, 1031.**
 capillary, A., 1264; B., 1042.
 constant flow, A., 705.
 continuously recording, (P.), B., 522.
- Kämpf, B., 465.**
- Redwood, corrections for, A., 58.**
- Viscosity, measurement of, A., 705; B., 421.**
 method and apparatus for, (P.), B., 912.
 units for, B., 949.
 data in graphical form, B., 93.
 thermal conductivity and diffusion in mixed gases, A., 32, 418, 793.
 and heat of dilution in aqueous solutions, A., 913.
 and inner friction in solids, A., 417.
 of binary mixtures, A., 296.
 of colloidal solutions, A., 1123.
 of electrolytes, A., 302, 560.
 of mixed gases, A., 1117.
 of liquids, and structure, A., 1363.
 of oils, B., 285.
 of suspensions, A., 1367.
 critical, formula for, A., 899.
 dynamic, table for calculation of, from Engler degrees, B., 53.
 variable, hydrodynamics of systems of, A., 418.
- Viscous liquids, changes of state in, A., 1365.**
 testing of, (P.), B., 998.
 See also under Liquids.
- Viscous materials, filtration of, (P.), B., 182.**
 mixing of, (P.), B., 615.
 influence of proximity of solid wall on consistency of, B., 825.
- Viscum album*, saponin from, A., 1159.**
- Visnagan, A., 885.**
- Visnagidin, A., 885.**
- Visnagin, A., 885.**

- Vitamins, A., 988; B., 903.
 synthesis of, (P.), B., 366, 1074.
 extraction of, (P.), B., 947.
 effect of brewers' yeast on deficiency of, A., 881.
 effect of sweetening agents on, A., 1197.
 effect of, on growth of bacteria, A., 1460.
 on thyroidism, A., 253.
 in relation to growth of tumours, A., 253.
 effect of deficiency of, on digestibility of proteins, fats, and carbohydrates, A., 515.
 in foods, etc., B., 740; (P.), B., 1154.
 in canned foods, B., 944, 992.
 in liver extract, B., 461.
 in margarine, B., 513.
 of milk, A., 398.
 in sugar cane juice, B., 270.
 in vegetables, B., 944.
 maintenance of, in preserved vegetable materials, (P.), B., 653.
 antineuritic, A., 530, 880.
 isolation of, A., 1098.
 of rice, curative activity of, A., 270.
 antipellagric and water-soluble, biological assay of, A., 1338.
 antirachitic, formation of, without light, A., 272.
 in human milk, A., 252.
 antiscorbutic, B., 317.
 in canned foods, B., 415.
 from decitrated lemon juice, A., 773.
 fat-soluble, A., 880, 989.
 growth-promoting, A., 959, 1097.
 from liver-fat, A., 988.
 water-soluble, extraction of, (P.), B., 514.
 testing of, with caseinogen, A., 772.
- Vitamin-A, A., 1463.
 molecular weight of, A., 771.
 spectrum of, A., 529.
 absorption spectrum of, A., 1337.
 concentrated preparations of, A., 1463.
 in butter, A., 1097.
 from fish oils, A., 1463; B., 169.
 extraction of, (P.), B., 212*.
 lucerne as source of, A., 880.
 in milk chocolate, B., 1071.
 content of, in oats, A., 880.
 relation of, to plant colouring matters, A., 528.
 and carotene, A., 398, 528, 529, 880, 988, 1097.
 relation of, to greenness in plant tissue, A., 772.
 destruction of, in vegetables, A., 772.
 assay of foods for, A., 988.
 destructive action of finely-divided solids on, A., 529.
 "diet 4" for research on, A., 270.
 effect of use of mineral oil on absorption of, A., 772.
 in serum and liver, A., 399.
 effect of vitamin-B deficiency on reserve of, in rats, A., 988.
 absorption and retention of, in young children, A., 530.
 addition of, to diet in rickets, A., 772.
 in hogs' livers in rickets, A., 269.
 unsaponifiable material as substitute for, A., 399.
 antixerophthalmic, chemistry of, A., 529.
 physiological standardisation of, A., 1463.
 colour reactions of, A., 529, 1463.
 detection of, A., 1195.
 with antimony trichloride, A., 269, 772, 988.
 in medicinal food preparations, B., 564.
 quantitative measurement of, A., 880.
 determination of, A., 269, 880, 1196.
- Vitamin-B, synthesis of, by micro-organisms, A., 881.
 complex nature of, A., 128, 530, 1196.
 third component of, A., 271.
 distribution of components of, A., 270.
 effect of nitrous acid on components of, A., 530.
 in vegetables, A., 1463.
 action of, A., 1097.
 phytase and growth-promoting activity of, A., 1464.
 action of, on lactation, A., 772.
 on lactation, growth and water metabolism, A., 881.
 bradycardia from deficiency of, A., 271.
 curative effects of, in avitaminosis-B, A., 1196.
 resorption in lack of, A., 128.
 changes in serum in deficiency of, A., 772.
 manufacture of product containing, (P.), B., 608.
- Vitamin-B, water-soluble, composite nature of, A., 270.
- Vitamin-B₁, A., 1338.
 isolation of, A., 270.
 chemical nature of, A., 1338.
 concentrates of, from yeast, A., 988.
 in cereals, A., 988.
 in foods, A., 1464.
 physiological function of, A., 1338.
 heat-labile, preparation of, A., 772.
 determination of, A., 1338.
 See also Torulin.
- Vitamin-B₂, A., 988.
 from egg-white, A., 271.
 action of reagents on, A., 773.
 alcohol-solubility of, A., 271.
 nitrogen balance in deficiency of, A., 773.
 stability of, A., 270.
 differentiation of, A., 659.
- Vitamin-B₃, identity of, from various sources, A., 881.
- Vitamin-B₄, assay of, A., 271.
- Vitamin-C, A., 1196.
 content of, in apples, A., 531.
 in fruits, A., 1196; B., 740.
 in German vegetables, B., 903.
 in sauerkraut, A., 399.
 in canned sauerkraut, B., 513.
 effect of deficiency of, on proteins of blood-serum, A., 881.
 determination of, A., 989.
- Vitamin-D, A., 531, 1197, 1463.
 rotation of, A., 1197.
 chemical nature of, A., 531.
 mode of action of, A., 659, 1197.
 antirachitic activation of foods by ultra-violet light and, B., 43.
 influence of, on growth and protein metabolism, A., 129.
 on laying hens, A., 399.
 influence of parathyroid hormone and, on calcium economy, A., 987.
 relation of isoeergosterols to, A., 129.
 overdosage of, A., 989.
 preparation of material containing, (P.), B., 515.
 in cow's milk, effect of irradiated ergosterol or yeast on, A., 989.
 crystalline, A., 1464.
 in fish oil, B., 169.
 standardisation of, A., 531, 773, 1338.
 evaluation of, A., 531.
 determination of, A., 1465.
- Vitamin-D₁, crystalline, A., 1464.
- Vitamin-D₂, A., 1465.
- Vitamin-G, determination of, A., 1338.
- Vitamins-A and -B, photographic effects of, A., 806.
- Vitamins-A and -D, A., 771.
 in salmon oil and canned salmon, B., 992.
 effect of irradiation of diet and of animals in deficiency of, A., 659.
 determination of, A., 128.
- Vitamins-B₁ and -B₂ in yeast, A., 530.
 differentiation between, A., 772.
- Vitrain, X-ray study of, B., 184.
 combustion of, B., 659.
- Vitreous articles, coating compositions for interior of, (P.), B., 158.
- Vitreous state, dilatometry of, A., 1220.
- Vlemingkx' solution. See Calcium sulphuratum solutum.
- Volcanoes, ash from, from Guatemala, A., 1030.
- Voltaic pile, Evans, protection of iron in aerated salt solutions in, B., 682.
- Voltmeters, electronic tube, calibration of, A., 816.
 thermionic valve, A., 591.
- Volume, apparent, of dissolved electrolytes, A., 680, 1122.
 atomic, and atomic models, A., 1214.
 atomic and molecular, A., 24, 25, 895.
 molecular, A., 1214.
 at absolute zero, A., 546.
 of dissolved electrolytes, A., 905, 1122.
 orthobaric, relation between temperature and, A., 417.
- Vomine, effect of, on blood-sugar, A., 1087.
- Vomiting, relation between blood sugar, uric acid and, A., 651, 871.

W.

Walden inversion, A., 711, 821, 1039, 1046.
 reagent concentration in, A., 935.
Walls, coverings of cement and leather for, (P.), B., 807.
 manufacture of slabs for, (P.), B., 634.
Wall board, manufacture of, B., 1096; (P.), B., 1142.
 treatment of bagasse for, (P.), B., 634.
 dryers for, (P.), B., 139, 370.
 heat-insulating, (P.), B., 790, 1096.
Washing of textiles, (P.), B., 198.
Washing machines, (P.), B., 535, 1008.
 for cloth, etc., (P.), B., 674.
Waste, animal, dry rendering of, (P.), B., 850.
 industrial, treatment of, B., 138.
 cleaning of trickling filters for, (P.), B., 1156.
 use of, as fertilisers, B., 987.
 determination of carbon in, B., 655.
Water, molecular structure of, A., 287.
 catalytic production of, in presence of platinum, A., 1017.
 electric spectrum of, A., 999.
 infra-red spectrum of, A., 283, 1211.
 Raman effect in, A., 21, 408, 545.
 Raman spectra and polymerisation of, A., 892, 1211, 1353.
 polarisation of Raman spectrum of, A., 668.
 X-ray diffraction in, A., 288.
 reflection of infra-red rays by, A., 892.
 fluorescence of, in ultra-violet light, as a measure of its purity, B., 700.
 apparatus for electrolysis of, (P.), B., 305, 1104.
 colloidal diaphragm for electrolysis of, A., 174.
 electrolytic transference of, in hydrobromic and hydriodic acids and in *N*-potassium iodide solution, A., 433.
 effect of electrolytes on activity of, A., 1234.
 hydrogen exponent of, A., 912.
 dielectric constant of, A., 546.
 dielectric constant of mixtures of ethyl alcohol and, A., 1223.
 and its vapour, thermal properties of, A., 31.
 heat of evaporation of, and specific volume of water vapour, A., 1001.
 heat of formation of, A., 170, 1236.
 heat of ionisation of, A., 912, 1011.
 heating of, flowing in pipes, B., 422.
 heating apparatus for, (P.), B., 746.
 hot, boiling, drying, and heating with, at high pressures, B., 865.
 lowering of vapour pressure of, by dissolved electrolytes, A., 566.
 evaporation of, by hot air, B., 613.
 condensers for low temperature evaporation of, A., 58.
 apparatus for distillation of, A., 1388; (P.), B., 948.
 vapour, infra-red absorption spectrum of, A., 892.
 electric discharge in, A., 784, 1210.
 sorption of, by active charcoal, A., 160.
 decomposition of, in presence of activated carbon, A., 804.
 pump for, at low pressure, A., 1389.
 value of C_p for, A., 792.
 boiling point of, as a function of pressure, A., 899.
 adiabatic expansion of, A., 1363.
 adsorption of, by silica gel, A., 794, 1227.
 adsorbed on silica gel, density of, A., 305.
 unimolecular films on, A., 34.
 variation of surface tension of, with thickness of glass plate, A., 1007.
 solubility of, in liquid hydrocarbons, B., 792.
 purification of, B., 137, 1076; (P.), B., 656, 1156.
 with active carbon, B., 225.
 by chlorine, B., 276.
 electrically, B., 981.
 by precipitation and coagulation, B., 744.
 at Cleveland, Ohio, B., 784.
 in swimming baths, (P.), B., 784.
 containing tar, (P.), B., 528.
 apparatus for, (P.), B., 568.
 material for, (P.), B., 996.
 bacteriology and chemistry of, at Breslau, B., 948.
 purification and softening of, B., 225; (P.), B., 784.
 removal of carbonates from, for brewing, (P.), B., 996.
 removal of chlorine or hypochlorites from, (P.), B., 568.
 carbonation of, (P.), B., 226.

Water, removal of taste of, B., 1028.
 removal of taste and odour of, with active carbon, B., 226.
 manganese in, and its removal, B., 1076.
 filtering materials for, B., 1075, 1076.
 filters for, (P.), B., 568, 1156.
 ammonia-chlorine treatment of, B., 1028.
 pre-chlorination in filtration of, B., 420.
 chlorination of, at Chicago, B., 420.
 control of chlorine in, B., 700, 744.
 sterilisation of, (P.), B., 996.
 by chlorine, B., 420.
 by metals, B., 516.
 effect of heating on hardness of, B., 1075.
 softening of, (P.), B., 656.
 apparatus for, (P.), B., 138, 368, 568, 656, 869*.
 plant for, (P.), B., 784, 908.
 by base-exchange, (P.), B., 180, 226, 1124.
 regeneration of base-exchange materials for, with sea-water, B., 655.
 manipulation of p_H of, at Springfield, B., 908.
 apparatus for decomposition of, (P.), B., 588.
 treatment of, with sodium aluminate, B., 1075.
 effect of lithium chloride in solution, on, A., 40.
 separation of, from petrol or similar liquids, (P.), B., 383.
 destruction of algae and fungi in, B., 420.
 effect of carbon dioxide, hydrogen sulphide, methane and of absence of oxygen on organisms in, A., 525.
 for manufacture of paper and pulp, B., 625.
 permissible content of, B., 320.
Water, acid waste, neutralisation of, (P.), B., 200.
 boiler, treatment of, B., 420.
 chemistry of, B., 1124.
 determination of phosphates in, in presence of silica, B., 320.
 boiler-feed, treatment of, (P.), B., 864.
 purification of, (P.), B., 703, 745.
 de-aeration of, (P.), B., 616.
 removal of dissolved gases from, (P.), B., 420.
 softening of, B., 421.
 control of salt content of, B., 517, 613.
 representation of results in analysis of, B., 42.
 detection of phosphates in, B., 865.
 determination of sulphates in, volumetrically, B., 909.
 brewing, decarbonation of, B., 607.
 chlorinated, dechlorination of, (P.), B., 744.
 conductivity, preparation of, A., 457.
 conductivity and "equilibrium," preparation of, A., 801.
 distilled, preparation of, A., 1144.
 filtered, in N. Carolina, residual alum in, B., 420.
 fresh, determination of oxygen in, A., 538.
 Leipzig supply, solubility of lead in, B., 92.
 mineral, measurement of electrical resistivity of, A., 1263.
 fixed residue and electrical conductivity of, A., 458.
 liberation of iodine in, (P.), B., 540.
 containing alkaline-earths, decrease in mineral matter content of, after removal of iron, B., 656.
 evaluation of, B., 1026.
 determination of caesium and rubidium in, A., 1259.
 determination of silicic acid in, B., 908.
 oligodynamic, micro-determination of silver in, A., 186.
 polluted, natural purification of, by action of bacteria and plankton, B., 419.
 subterranean, origin of, A., 929.
 turbid, purification of, B., 225.
 waste, purification of, B., 1124; (P.), B., 516.
 removal of cyanides from, (P.), B., 882.
 biological treatment of, (P.), B., 516.
 damage caused by fungi in, B., 864.
NATURAL WATER :—
 activity of, A., 706.
 containing anophelino mosquitoes, oxygen absorption of, A., 706.
 of the United States, fluorides in, A., 1265.
 medicinal, determination of ions in, spectrographically, A., 816.
 Bore water, determination of alkali metals in, A., 1385.
 Lake water, ultra-violet transmission by, A., 1351.
 in Japan, p_H in, A., 1028.
 salt, equilibria of salts in, A., 432.
 Potable or drinking water, de-acidification of, B., 864.
 of Cleveland, Ohio, filtered, preammoniation of, B., 568.
 of Lancaster, Pa., elimination of taste and odour from, B., 568.

NATURAL WATER:—

- Potable or drinking water of Latvia, iodine in, in relation to goitre, A., 331.
 New Jersey, attempts to prevent phenol taste of, B., 656.
 New York, control of micro-organisms in, B., 137.
 Stuttgart, use of activated carbon in purification of, B., 137.
 of Toronto, Ontario, superchlorination of, B., 568.
 determination of calcium and magnesium in, volumetrically, B., 92.
 determination of iron in, colorimetrically, B., 908.
 determination of manganese in, B., 516.
 determination of nitrates in, B., 420, 1076.
 Rain water, combined nitrogen in, A., 594.
 River water, rate of purification in, B., 137.
 coagulation of, with ferric iron, B., 700.
 investigation of pollution of, B., 137, 419.
 effect of sunlight and green organisms on re-aëration of, B., 419.
 of the Mississippi, phosphorus and nitrogen in, A., 930.
 Sea water, specific gravity and vapour pressure of, A., 1265.
 dissociation constants of, A., 1233.
 buffer capacity of, A., 1389.
 determination of pollution of, B., 320.
 ammonia in, A., 1145.
 calcium sulphate in, A., 1225.
 bacteriological precipitation of lime in, A., 1389.
 variation in salinity of tidal pools of, due to rain, A., 930.
 deterioration of structures in, B., 806.
 action of, on alcoholic fermentation, A., 1091.
 pharmacological action of, A., 118.
 at Puget Sound, A., 1265.
 tropical, precipitation of calcium carbonate in, A., 930.
 determination of alkali metals in, A., 643.
 determination of ammonia in, volumetrically, A., 586.
 determination of carbon dioxide in, A., 186.
 determination of p_H of, A., 925.
 determination of oxygen in, A., 538.
 Spring water, occurrence of hydrogen phosphide in, B., 744.
 Spring and mineral water, carbonaceous, Gornji Gabernik, A., 816.
 fresh and preserved, toxicity of, A., 652.
 sulphur, of S. Giorgio in Angarano, A., 458.
 Anticolan, physiological action of, A., 868.
 of Ferrarelle, A., 816.
 of Rumania, A., 1389.
 of South Poland, radioactivity of, A., 331.
 of Stone Mountain, radioactivity of, A., 331.
 of Teano, A., 1028.
 at Termini Imerese, A., 1389.
 detection and determination of fluorine in, A., 55.
 Well water, plant for removal of colour from, B., 700.
 softening of, B., 568.
 Jamaica, removal of taste, by superchlorination and dechlorination of, B., 568.
 in Manila, radioactivity of, A., 929.
Water analysis:—
 analysis of, B., 1076.
 interpretation of, from point of view of corrosion, B., 656.
 detection of, in milk, B., 739.
 detection of *B. coli* in, B., 225.
 detection and determination of, in ethyl alcohol, A., 61; B., 289.
 determination of, A., 185, 1177, 1257.
 by distillation, A., 1023, 1256.
 by drying, A., 1023.
 ebullioscopically, A., 585, 811.
 using methyl alcohol, A., 1023.
 in power alcohol, B., 708.
 in cheese, B., 651.
 in drugs, spices, and chemical, B., 318.
 in materials, (P.), B., 140.
 in paper, pulp, etc., B., 15.
 determination of ammonia in, volumetrically, A., 586.
 determination of iron in, B., 320.
 determination of phenols in, B., 706.
 determination of silicic acid in, B., 226.
 determination of solids in vapour of, B., 997.
 determination of sulphate in, volumetrically, B., 180.
 Water pipes, corrosion of, B., 637.
 formation of natural and artificial protective layers in, B., 784.

- Water pipes, corrosion-resistant coatings of calcium carbonate on, B., 320.
 domestic supply, life of, in relation to material, diameter, and nature of water, B., 977.
 underground, detection of corrosion of, B., 762.
 Water systems, hot, domestic, (P.), B., 704.
 Water-cress, vitamins of, A., 269.
 Watermelons, pigment of, A., 132.
 vitamin content of, B., 415.
 Waterproof board. See under Board.
 Waterproof cement. See under Cement.
 Waterproof paper. See under Paper.
 Waterproof products, fibrous, manufacture of, (P.), B., 343.
 Waterproofing, coating compositions for, (P.), B., 936.
 production of rubber dispersions for, (P.), B., 172.
 of building materials, (P.), B., 66.
 of cement, compositions for, (P.), B., 590.
 of concrete bricks, etc., (P.), B., 249.
 of concrete constructions, (P.), B., 542.
 of fabrics, (P.), B., 59, 1090.
 of fibrous products, (P.), B., 585.
 of gut, (P.), B., 438.
 of leather, (P.), B., 600.
 of materials, (P.), B., 770, 802.
 of paper, compositions for, (P.), B., 585.
 of porous stonework, etc., (P.), B., 679.
 of wool, (P.), B., 244.
 Waterworks at Denver, filter sand in, B., 1075.
 Wavellite from Bohemia, A., 707.
 Wax, and wax mixtures, apparatus for sweating of, (P.), B., 384.
 in rice polishings, B., 125.
 bees-, Japanese, B., 125, 307.
 microscopic analysis of, B., 329.
 flax, B., 436.
 insect, A., 1321.
 montan, products from, B., 1000; (P.), B., 56.
 sealing. See Sealing wax.
 determination of, in pitch, B., 142.
 in shellac, B., 33.
 Waxes, manufacture of, (P.), B., 685.
 hardening of, (P.), B., 193.
 separation of, from their solutions, (P.), B., 596, 795.
 removal of resins from, (P.), B., 935.
 manufacture of emulsions of, (P.), B., 596.
 manufacture of oxidation products of, (P.), B., 147.
 manufacture of polishes from, (P.), B., 962.
 animal, purification of, (P.), B., 1018.
 Weed-killers, (P.), B., 692, 858.
 sodium chlorate, for banana plantations, B., 215, 1067.
 Weights, standardisation of, A., 816.
 molecular, determination of, A., 593, 1221.
 correction for adsorption in, A., 297.
 by dialysis, A., 416.
 by gaseous densities, A., 792.
 in liquid ammonia, A., 292.
 in camphor solution, A., 30.
 nomograph of percentage weight and, B., 785.
 of colloids, A., 562, 906.
 of highly-polymerised compounds, A., 560.
 Welding in chemical industry, B., 118, 1057.
 composition for, (P.), B., 1103.
 machines for, (P.), B., 725.
 electrodes for, (P.), B., 892, 932.
 rods for, (P.), B., 26, 981.
 reclaiming and re-using used rods for, (P.), B., 890.
 striking back in torches for, B., 870.
 arc, electrodes for, (P.), B., 257, 306, 549, 594, 981.
 rod for use in, (P.), B., 639, 981, 1104.
 autogenous, chemical and physical phenomena in, B., 681.
 electric, of tubes of different hardness, (P.), B., 595.
 fusion, production of age-proof welds by, (P.), B., 28.
 oxy-acetylene, influence of pressure conditions on efficiency of, B., 887.
 surface, in iron and steel, B., 251.
 Welding wire, production of material for, (P.), B., 497.
 Wetting, method of rendering visible, A., 679.
 Wetting agents, (P.), B., 797, 917, 918, 1003, 1041, 1086, 1133.
 manufacture of, (P.), B., 12, 155, 195, 237, 289, 290, 386, 433, 579.
 condensation products for, (P.), B., 57.

- Wetting tension, measurement of, A., 300.
- Whale, apparatus for treatment of materials from, (P.), B., 501.
- Wheat, studies in, B., 461.
 effect of X-rays on growth of seedlings of, A., 990.
 effect of fertilisers on yield and composition of, B., 175, 1022.
 removal of buckwheat seeds from, prior to milling, (P.), B., 741.
 milling of, in France, B., 822.
 hygroscopicity of, B., 694.
 relation of moisture to keeping quality of, B., 41.
 baking quality of, B., 512, 1118.
 anthocyanins in, A., 536.
 diastase from, A., 653.
 slimy gluten of, B., 943, 1069.
 determination of gluten quality of, by fermentation, B., 943.
 isolation of phytosterol from embryos of, A., 606.
 proteins of, A., 990.
 isoelectric point and solubility in alcohol of, A., 1009.
 relation between protein content and quality of, B., 694.
 peptisation of proteins in, B., 694.
 action of seed disinfectants on, B., 1150.
 control of bunt in, B., 1068.
 sulphur dusting for prevention of black chaff in, B., 313.
 leaf rust in, B., 1111.
 English, influence of manurial treatment on baking quality of, B., 859.
 Khapli, yellow colouring matter of, A., 1426.
 New Zealand, p_H value of, B., 460.
 baking quality and crude proteins in, B., 738.
 winter, catalase activity of leaf juice of, A., 1465.
 winter leaching and manurial value of green manures and crop residues for, B., 857.
 effect of summer green manures on ammonia and nitrate content of soils cropped for, B., 857.
 effect of raw phosphates on, B., 507.
 respiration of, A., 1465.
 hard, effect of available nitrogen in production of, B., 39.
 detection of protein in, B., 41.
 determination of moisture in, B., 1118.
- Wheat germ, toasting of, for use as food, B., 694.
 in diet of black rats, A., 129.
- Wheat plants, organic acids in, A., 661.
- Wheat products, determination of total phosphorus, lipid phosphorus and phytosterols in, B., 1069.
- Wheatstone bridge, new type of, A., 929.
- Whey, extraction of albumin and sugar from, (P.), B., 861.
 manufacture of products from, (P.), B., 88.
- Whey-protein. See Proteins.
- Whisky, extractives of, B., 511.
- White lead, electrolytic manufacture of, B., 403.
 precipitated, preparation of, of high opacity, B., 356.
- White metal, removal of zinc from, B., 352.
 analysis of, B., 809.
 determination of arsenic in, B., 1057.
- Whiteware bodies, influence of time on maturing temperature of, B., 491.
- Whortleberry juice, detection of, by modified Plahl's reaction, B., 1152.
- Willow, distribution of total nitrogen during regeneration of, A., 883.
- Windows, manufacture of silica sheets for, (P.), B., 65.
- Wines, treatment of, with ozonised air, B., 511.
 furnace for heat-treatment of, (P.), B., 119.
 freezing of, B., 1152.
 influence of bottle glass on, B., 859.
 relation between p_H and acid taste of, B., 314.
 acidity of, B., 563.
 β -butylene glycol in, B., 412, 693.
 colouring matters of, A., 402.
 distillates of, B., 412.
 rôle of iron in, B., 459.
 must in, B., 218.
 vitamin content and nutritive value of, A., 269.
 sterilisation of, by adsorption, B., 86.
 Alsatian, B., 778.
 coloured, determination of acidity of, B., 1117.
 of Comtat-Venaissin, B., 86.
 fruit, β -butylene glycol in, B., 412.
 sulphurous and lactic acid in production of, B., 40.
 detection of, in grape wine, B., 608, 1153.
 Hérault, lactic acid in, B., 218.
- Wines, Mascara, glycerin in, B., 1152.
 Moroccan, composition of, B., 694.
 plastered, B., 607.
 port, sugar in, B., 218.
 raisin, B., 1152.
 determination of potassium and sodium in, B., 563.
 raisin and currant, examination of, by quartz lamps, B., 608.
 red, measurement of colour of, B., 218.
 fluorescent indicators for determination of free acidity of, B., 693.
 strong, tears of, A., 1119.
 sweet, detection of adulterants in, B., 650.
 detection of whortleberry juice in, B., 1152.
 determination of sucrose in, B., 460.
 white, cause of "casé" of, B., 693.
 iron and copper in, B., 563.
 use of quartz lamp in analysis of, B., 40.
 detection of sorbitol in, B., 413.
 determination of fixed acids in, B., 362.
 determination of volatile acids in, B., 460, 1153.
 determination of alcohols in, B., 1026.
 determination of glycerol in, B., 362.
 determination of lactic acid in, B., 942.
 in presence of sugar, B., 822.
 determination of potassium ferrocyanide required for clarification of, B., 40.
 determination of sorbitol in, B., 778.
- Wine casks, filter plugs for, (P.), B., 219.
- Wires, furnaces for heating of, (P.), B., 725.
 heat treatment of, (P.), B., 1144.
 treatment of, prior to drawing, (P.), B., 764.
 drawing of, B., 1055.
 electro-galvanising of, at high current densities, B., 638.
 varnishing of, (P.), B., 121.
 drawn, properties of, and power consumption in their preparation, B., 887.
 electric, insulation of, (P.), B., 70.
 non-ferrous, drawing of, B., 1055.
- Wireless. See Radio.
- Wogonin, constitution of, and its derivatives, A., 493.
- Wollframite, replacement of, by scheelite, A., 817.
- Wollastonite, equilibrium of, with anorthite and pyroxene, A., 310.
- Wood, oxygen in formation of, A., 1466.
 crystal structure of, A., 1360.
 mechanical properties of, B., 974.
 drying of, A., 1102; (P.), B., 423.
 kilns for, (P.), B., 634.
 hygroscopicity of, after drying, B., 441.
 effect of mild heat-treatment on chemical composition of, B., 387.
 sorption of water vapour by, B., 97.
 solvent extraction of, (P.), B., 154.
 effect of freezing on, B., 760.
 sinkage of logs of, B., 22.
 distribution of lignin in, A., 1339.
 effect of extractives on strength of, B., 885.
 effect of grain of, on durability, B., 450.
 distillation apparatus for, (P.), B., 1032.
 degradation of, to cellulose and nitro-lignin, A., 1402.
 disintegration of, for manufacture of pulp, (P.), B., 967.
 chemistry of, B., 436, 876, 1004.
 preservation of, (P.), B., 66, 397, 590, 885.
 by soluble salts, B., 926.
 preservatives for, (P.), B., 843.
 determination of toxicity of, B., 249.
 impregnation of, (P.), B., 160, 351, 761, 885.
 products for, (P.), B., 160.
 depth of penetration of mercuric chloride in, B., 884.
 suitability of tar oils for, B., 590.
- dry-rot in, A., 886.
 immunisation of, (P.), B., 83.
 insect- and fire-proofing of, (P.), B., 160.
 uniting surfaces of, (P.), B., 66.
 adhesives for, B., 505.
 adhesion in painting and glueing of, B., 502.
 glueing of, with starch substances, etc., (P.), B., 843.
 effectiveness of coatings on, B., 72.
 coating of, with artificial resins, (P.), B., 843.
 painting of, B., 403.
 ornamentation for, (P.), B., 354.

- Wood, staining of, B., 542.
 production of pearl effect on surface of, (P.), B., 673.
 photographic reproduction of grain of, (P.), B., 180, 418.
 grown on different soils, characteristics of, B., 215.
 manufacture of artificial products from, (P.), B., 59.
 manufacture of esterified products from, (P.), B., 154.
 production of fibrous material from, (P.), B., 154, 1136.
 testing of, B., 974.
 mechanical testing of, in Great Britain, and preservative treatments, B., 974.
 artificial, manufacture of, (P.), B., 159, 242, 885.
 plant for, (P.), B., 590.
 Australian, chemistry of, B., 634, 1051.
 beech. See Beech wood.
 coniferous, Swedish, durability and strength of, B., 973.
 fossil. See Lignite.
 hard, manufacture of substitute for, (P.), B., 397.
 Philippine, durability of, against fungi, B., 679.
 pine. See Pine wood.
 ply-, manufacture of, (P.), B., 1052.
 spruce. See Spruce wood.
 veneer, printing of, (P.), B., 203.
 waste, distillation of, and utilisation of the products, (P.), B., 98.
 utilisation of, for power generation and heating, B., 98.
 machine for briquetting of, (P.), B., 795.
 detection of varieties of, B., 1051.
 determination of base content of, A., 1102.
 determination of lignin in, B., 876.
 Wood carbolineum, insecticidal properties of, B., 83, 132.
 Wood fibres, microscopic structure of, B., 100.
 Wood fibres, purified, B., 387, 581.
 mercerisation of, (P.), B., 15.
 high- α -cellulose, paper-making qualities of, B., 436.
 Wood liquors, recovery of rosin soap materials from, (P.), B., 596.
 Wood oils, sulphur-treated, B., 31.
 Wood pulp, production of, (P.), B., 389, 673.
 from woods of high resin content, (P.), B., 921.
 purification of, (P.), B., 341.
 beating of, in laboratory and mill, B., 966.
 recovery of soda from waste liquors from, (P.), B., 1009.
 measurement of swelling of, B., 532.
 relation between chlorine consumption and copper number of, B., 714.
 bleaching of. See under Bleaching.
 production of nitrocellulose from, (P.), B., 46.
 production of articles of, (P.), B., 534.
 testing of, B., 107, 1088.
 for fine paper mills, B., 966.
 artificial, manufacture of plastic materials from, (P.), B., 671.
 chemical, production of, (P.), B., 967.
 ground, preparation of, (P.), B., 967, 1136.
 mechanical, determination of, in paper, B., 15.
 sulphite, manufacture of, (P.), B., 341.
 digester for, (P.), B., 837.
 determination of lignin in, B., 1005, 1088.
 Wood's light, titration in, A., 924.
 sugar analysis with, B., 901.
 Wool, X-ray structure of, A., 897.
 micelle structure of fibres of, A., 1003.
 cleaning apparatus for, (P.), B., 347.
 treatment of, to give non-shrink finish, (P.), B., 755.
 conditioning of, (P.), B., 923.
 denaturation of, by carbamide, B., 436.
 average fineness of, B., 477.
 scouring and carbonisation of, (P.), B., 486.
 treatment of scouring liquors from, B., 138.
 acid felting of, (P.), B., 1005.
 azo-dyes for, (P.), B., 291.
 waterproofing of, (P.), B., 244.
 action of pancreatin on, A., 1456.
 protection of, from moths, etc., (P.), B., 347.
 development of mildew in, B., 581.
 production of cellulose substitute for, (P.), B., 878.
 acid-treated, heat of combustion of, in reference to theory of dyeing, B., 628.
 blackface, nature of medulla in, A., 1177.
 New Zealand, sulphur in, B., 875.
 wool grease in, and effect of covering of sheep thereon, B., 875.
 raw, disinfection of, (P.), B., 836.
 reindeer, B., 477.
 Wool, South African, sulphur content of, A., 1081.
 determination of, in roofing felt, B., 396.
 Wool fat, water-soluble product from fatty acids in, (P.), B., 212*.
 neutral and purified, acid formation in, A., 861.
 Wool fibres, impregnation of, with fatty substances, B., 485.
 measurement of scaliness of, B., 836.
 Wool louse, wax from, A., 975.
 Woollen fabrics, milling of, B., 152.
 shrinking of, (P.), B., 923.
 weighting of, B., 922.
 printed, continuous damping and steaming of, B., 345.
 which do not develop shine, manufacture of, (P.), B., 242.
 Woollen goods, knitted, weighting of, B., 969.
 Worms, Foulgen's reaction applied to, A., 770.
 Worts, production of, B., 822; (P.), B., 219*.
 measurement of surface tension of, B., 362.
 determination of colour of, B., 903.
 antiseptic content of, B., 562.
 brewers', fermentation of, (P.), B., 1024.
 hopped, boiling of, B., 1116.
Wrightia annamensis, oil of, B., 500.
 Writing materials, arsenic in, B., 308.
 Writing tablets, coating for, (P.), B., 534.
 Wurster's blue and red, potentiometric study of, A., 1129.
 Wurtzite, lattice energy of, A., 548.
 Wyomingite, blast-furnace smelting of, with phosphate rock, B., 392.
 volatilisation of potash from, B., 392.
- X.
- κ -Xanthatoundecoic acid, A., 824.
 Xanthhydrol, condensation of, with thionaphthen and thiophen, A., 361.
 Xanthhydrols, thio-, substituted, synthesis of, A., 96.
 Xanthic acid, apparatus for dissolving salts of, (P.), B., 971.
 alkali salts, recovery of, (P.), B., 157.
 and nitroso-, iron salts, A., 934.
 cyclohexylbenzyl esters, salts of, A., 1280.
 menthyl and bornyl methyl esters, hydrolysis and decomposition of, A., 847.
 Xanthine, determination of, in blood, A., 1440.
n- and *iso*-Xanthines, reactivity of, and their aromatic constitution, A., 743.
 Xanthobilirubin acid, and its isomerides, synthesis of, and their methyl esters, A., 968.
 methyl ester, *hexachloro*-derivative, A., 1421.
 Xanthogens, manufacture of, (P.), B., 1094.
 Xanthone, and thio-, hydrazones and ketazines of, A., 218.
 Xanthophyll, A., 733, 885, 1066.
 in flowers, A., 402.
 absorption spectra of, A., 1110.
 infra-red absorption spectrum of, A., 20.
 Xanthoporphinogen, A., 634.
Xanthosoma sagittifolium. See Yautiá, yellow.
Xanthoxylum carolinianum, constituents of bark of, A., 1199.
 Xanthylene, dithio-, and its disulphone, A., 234.
 Xenon, atomic weight of, A., 890.
 in natural gases of Bulgaria, A., 594.
 pure, extraction of, from liquid air residues, B., 881.
 physical constants of, A., 1117.
 spectrum of, A., 7, 1344.
 infra-red spectrum of, A., 404.
 K-series spectrum of, A., 4.
 second spark spectrum of, A., 540.
 ionised, spectrum of, A., 276.
 crystal structure of, A., 27.
Xenopus laevis, metabolism in pigmentary effector activity and pituitary removal in, A., 516.
 Xenotime, paramagnetic rotation of, A., 29, 30.
p-Xenylcarbimide, A., 834.
 Xylene, movement of drops of, on aqueous *n*-propyl alcohol, A., 162.
 pyrogenetic decomposition of, at high pressure, A., 832.
 colour tests for, B., 433.
o-Xylene, 5-bromo-4-amino-, acetyl derivative, A., 84.
m-Xylene, formation of methane from, A., 1043.
 determination of, in xylols, B., 1040.

- (*o*-Xylene, *Me:Me* = 1:2; *m*-xylene, *Me:Me* = 1:3; *p*-xylene, *Me:Me* = 1:4.)
- m*-Xylene, dibromo-, action of magnesium on, A., 1405.
5-bromo-6-fluoro- and 5-bromo-6-fluoro-*mono*- and *di*-nitro-, A., 720.
m-Xyleneazohomophthalimide, A., 721.
m-Xylene-6-diazonium fluoborate, 5-bromo- and 5-bromo-4-nitro-, A., 720.
Xyleneglycocholeic acid, A., 1179.
Xylenesulphonalkylamides, production of, (P.), B., 58.
m-5-Xylenol, and amino-, *mono*- and *di*-nitro-, and nitroamino-, and their derivatives, A., 214.
Xylenols, action of chlorosulphonic acid on, A., 83.
3:5-dinitrobenzoyl derivatives, A., 837.
m-Xylenols, derivatives of, A., 213.
Xylenoldisulphonyl chlorides, and their disulphonanilides, A., 83.
m-5-Xylenolsulphonic acid, 4-amino-, sodium salt, A., 214.
m-4-Xylenol-5-sulphonyl chloride, A., 83.
vic-o-Xylidine, derivatives of, A., 1408.
o-4-Xylidine, 5-bromo-, A., 84.
Xylindric acid, salts and derivatives of, A., 227.
Xylindrin, and its derivatives, A., 227.
l-Xyloketose, effect of, on metabolism, A., 867.
p-Xyloquinolsulphonic acid, barium salt, A., 93.
Xylose, X-ray examination of, A., 1275.
fermentation of, by *Lactobacillus*, A., 1334.
as substrate in citric acid fermentation, B., 217.
d-Xylose, dibenzyl-, phenyl-*p*-chlorobenzyl-, and phenylbenzylhydrazones, A., 938.
r-Xylotrimethoxyglutaric acid, A., 1036.
m-4-Xylylacetoneitrile, A., 1292.
l-*m*-Xylylamidoanthraquinone, A., 357.
p-Xylyl 1-anthraquinolyl ketone, A., 357.
Xylyl 1-anthraquinolyl ketoximes, and their anhydrides, A., 357.
o-4-Xylyl chlorobromomethyl ketone, A., 91.
o-4-Xylyl dichloromethyl ketone, A., 91.
m-4-Xylyl cyanomethyl ketone, A., 91.
p-Xylyldi-*n*-amylphosphine, and its salts, A., 637.
p-Xylyldibutylphosphines, and their salts, A., 637.
p-Xylyldiethylphosphine, and its salts, A., 637.
p-Xylyldimethylhydroxyphosphinocarbitronic anhydride, A., 637.
p-Xylyldimethylphosphine, and its salts and oxide, A., 637.
p-Xylyldi-*n*-propylphosphine, and its salts, A., 637.
p-Xylylene glycol methyl ether, and its derivatives, and ethyl ether, A., 955.
N-*m*-Xylylhydantoin-3-acetamide, A., 966.
3-*m*-2-Xylylimino-5-thiouazole, A., 100.
o-Xylylmalonic acid, ethyl ester, A., 1292.
o-Xylylmethylacetacetic acid, ethyl ester, A., 948.
m-4-Xylyloxide, phenyltrimethylammonium, A., 834.
ε-*p*-Xylylpentane-β-dicarboxylic acid, A., 89.
m-4-Xylyl thiocyanomethyl ketone, A., 91.
- Y.
- Yarns, production of, from paper strip, (P.), B., 627.
liquid treatment of, (P.), B., 18, 585.
wet twisting of, (P.), B., 626.
porosity and diameter of, B., 152.
effect of moisture on strength and elongation of, B., 477.
artificial, manufacture of, (P.), B., 342, 672.
manufacture and treatment of, (P.), B., 346.
cellulose nitrate, weighting of, (P.), B., 391.
crêpe, manufacture of, (P.), B., 535, 1090, 1137.
linen-like, production of, from cotton fibres, etc., (P.), B., 838.
textile, treatment of, in compact packages, (P.), B., 60.
on spools, etc., with liquids, (P.), B., 923.
variegated, production of, (P.), B., 800.
vegetable, immunisation of, to direct dyes, (P.), B., 243.
Yautia, yellow, vitamin-B in, A., 1464.
Yeast, culture and properties of new varieties of, A., 1333.
involution cultures of, A., 768.
growth of, by aëration method, A., 263.
effect of metallic salts on, A., 1192.
effect of copper and iron on growth and development of, A., 522.
growth stimulants of, A., 1192.
preparation of nutritive media for, (P.), B., 650.
manufacture of, (P.), B., 133, 271, 314, 563, 650, 694, 778, 1118.
without alcohol, (P.), B., 942.
manufacture and growth of, (P.), B., 86, 87.
- Yeast, purification of, (P.), B., 778.
oxygen consumption, respiratory quotient and reduction of methylene blue by, A., 1448.
p_H in respiration and fermentation of, A., 1090.
influence of neutral-red on respiration of, A., 522.
adsorption of iodine by, A., 878.
nature of carbohydrate constituents of cell membrane of, A., 1277.
fat of, A., 1333.
fermentation by, A., 985.
treatment to increase, (P.), B., 694.
cell-free, A., 393.
action of imino-producing amines on, A., 1333.
effect of cyanide and other salts on, A., 1457.
effect of iodine on, A., 1091.
action of zinc salts on, A., 522.
fermentation of acetoacetic acid by, A., 1091.
in fermentation of honey, B., 1120.
yield of, from molasses, B., 1117.
fractionation of nitrilites of, A., 530.
protective action of, on amylase, A., 519.
production of glycerol and pyruvic acid from sugars by, A., 393.
preparation of glycogen from, A., 1277.
growth-promoting substance of, A., 1091.
antigenic properties of invertase of, A., 249.
production of methylglyoxal and pyruvic acid by, A., 391.
easily-cleavable phosphoric acid compound in, A., 523.
hydrolysis of polypeptides by, A., 392, 874.
sterols from, A., 1154.
oxidation of sugar by, A., 1457.
phosphorylation of sugars by, A., 1332.
trehalose from, A., 768.
vitamin-B₁ and -B₂ contents of, A., 530.
effect of, on ammonia and indole production by bacteria, A., 876.
behaviour of, with *Nymphaea coccis*, B., 39.
regulatory action of, in nutrition of rats, A., 1325.
effect of, on processes in liver and muscle, A., 257, 646, 1184.
oxidation-reduction potential of complex iron compounds in, A., 1090.
manufacture of medicinal products from, (P.), B., 942.
staining of cells of, with methylene blue, A., 522; B., 649.
bakers', B., 607.
production and nutrition of, B., 1069.
raw material for, from starch, B., 901.
influence of age on fermentation time of, B., 217.
beer, respiration and fermentation of, A., 393.
effect of cholesterol on fermentation with, A., 1457.
making of bread with, B., 413.
action of, on cystine, A., 655.
brewer's, treatment of, (P.), B., 133.
effect of electric potentials on, B., 903.
oxidation-reduction with, A., 125.
addition of, to vitamin-free diet, A., 881.
separation of, from fermenting liquors, (P.), B., 1118.
brewer's and Sauterne, fermentation of mixed sugars by, A., 522.
crushed, gram reaction in, A., 768.
dried, constituents of, B., 511.
in synthetic diet, A., 256.
dried and living, action of poisons on, and on the expressed juice, A., 875.
of high enzymic activity, manufacture of, (P.), B., 778.
iodised, manufacture of, (P.), B., 942.
pressed, determination of moisture in, B., 1116.
saké, biochemistry of, A., 768.
salted, influence of, on growth of young rats, A., 256.
Sauterne, fermentation of mixed sugars by, A., 263.
wine, decomposition of malic acid by, A., 985.
Yeast cells, dry, fermentation and growth in, A., 985.
Yeast extracts, constituents of, B., 511.
Yeast industry, B., 85.
Yeast juice, fermentation by, A., 1457.
temperature of, A., 985.
Yellow-II, derivatives of, A., 1410.
Yellow fever, experimental guanidine-like substances in blood in, A., 977.
in monkeys, metabolism in, A., 510, 1181.
Yew, constituents of, A., 1171, 1200.
Yohyrine, and its salts, A., 369, 750.

Yoghurt. See under Milk, sour.
 Yohimba alkaloids, constitution of, A., 242.
 Yohimbine, A., 369, 750, 1171.
 melting point of, A., 243.
 α - and iso -Yohimbines, identity of, A., 243, 970.
 Young's modulus, A., 1360.
 Ytterbium, separation of, by electrolytic reduction, A., 51.
 Yttrium monoxide, band spectrum of, A., 540, 1210.
Yucca filamentosa, polylavans of leaves of, A., 1100.

Z.

Zea mays, relation between initial root length and subsequent growth in, A., 883.
 absorption of ammonium and nitrate by root of seedlings of, B., 1149.
 production of carbon dioxide by germinating seeds of, A., 1339.
 See also Maize.
 Zeeman effect with electrodeless discharge, A., 991.
 of forced radiation transitions, A., 541.
 of quadripole radiation, A., 1203.
 Zein, dielectric constant of, A., 562.
 Zeolites, A., 191.
 manufacture of, (P.), B., 20, 393, 632.
 regeneration of, (P.), B., 972.
 base-exchange materials of, B., 359.
 artificial, manufacture of, (P.), B., 62.
Zieria Smithii, essential oils from, B., 782.
 Zinc, atomic weight and isotopes of, A., 280.
 electrothermic furnace for production of, B., 1014; (P.), B., 447.
 removal of, from white metal, B., 352.
 recovery of, from its ores, (P.), B., 813.
 refining of, B., 1056; (P.), B., 547.
 refined, influence of added metals on properties of, B., 444.
 effect of temperature and cooling in casting of, B., 495.
 cold-working of, B., 299.
 spectrum of, A., 7, 1204.
 optical excitation of, A., 540.
 excitation of line spectrum of, A., 406.
 K-absorption spectrum of, A., 993.
 fluorescence spectrum of, A., 540.
 high-frequency spectrum of, A., 1104.
 molecular spectrum of, A., 664, 888.
 spark spectrum of, A., 664.
 resonance radiation of, A., 1204.
 electrodeposition of, (P.), B., 764.
 electroplating with, B., 207, 1057.
 solution for, B., 1100; (P.), B., 891.
 on aluminium and its alloys, (P.), B., 449.
 of iron, steel and iron articles, (P.), B., 933.
 change of potential of, with thermal working, A., 434.
 molten, solubility of iron in, B., 976.
 destructive action of, on metals and alloys, B., 161.
 condensation of vapour of, (P.), B., 497.
 crystals, photo-electric properties of, A., 1106.
 electrolytic properties of, A., 1116, 1360.
 resistivity of, A., 1221.
 degradation of, by etching, A., 673.
 twin crystals in, A., 1338.
 anisotropy of sheets of, B., 545.
 velocity of solution of, in hydrochloric acid, A., 437.
 immersed in copper sulphate solution, composition of deposit formed on, A., 49.
 effect of temperature on corrosion of, B., 928.
 outdoor corrosion of, and effect of rainfall and atmospheric pollution thereon, B., 681.
 and its alloys, pickling baths for, (P.), B., 301.
 cathodic passivity of, A., 1243.
 coating of, (P.), B., 813.
 coating of ferrous wires, etc. with, (P.), B., 547.
 hot galvanising with cadmium and, B., 445.
 autoxidation of, A., 695.
 action of cyanogen on, A., 1244.
 effect of moist lithopone on, B., 204.
 precipitation of, from solution as sulphide, (P.), B., 924.
 attack of insects on, B., 681.
 biochemistry of, A., 522

Zinc, biological function of, A., 980.
 content of, in rat's liver, A., 250.
 Alagirski distilled, refining of, B., 25.
 electrothermal, B., 444.
 Zinc alloys, (P.), B., 164, 256, 847, 1015.
 for bearing surfaces, (P.), B., 27, 725.
 binary, with transition elements, A., 418.
 with aluminium, (P.), B., 354.
 joining of, to steel, (P.), B., 890.
 with copper, crystal structure of, A., 896.
 spectroscopic analysis of, A., 702.
 finely divided, preparation of, (P.), B., 981.
 with copper and nickel, (P.), B., 165*.
 paramagnetism of, A., 673.
 with copper and silicon, (P.), B., 812, 890.
 with copper and tin, (P.), B., 812.
 anti-frictional, (P.), B., 724.
 with manganese, A., 1364.
 with silver, solution of, in acids, A., 1133.
 Zinc salts, production of solutions of, (P.), B., 62.
 effect of ammonium, hydrogen, and potassium ions on reaction of, with ferrocyanides, A., 1385.
 Zinc carbonate, pure, manufacture of, (P.), B., 632, 718.
 chloride, formation of mixed crystals of, with cobalt and iron chlorides, A., 901, 1235.
 thermodynamics of molten solutions of lead chloride and, A., 309.
 precipitation of calcium chloride in lyes of, (P.), B., 489.
 ferrite, A., 444.
 halides, heats of formation of, A., 432.
 complex, compounds of amines with, A., 412.
 hydride, Zeeman effect in spectrum of, A., 6.
 band spectra of, A., 137, 992.
 nitrate, commercial, basic salts in, B., 1138.
 nitrates, basic, equilibria of formation of, A., 1011.
 oxide, pure, manufacture of, (P.), B., 632, 718.
 heats of adsorption of gases on, A., 559.
 catalytic activity and adsorptive power of, A., 804, 1227.
 solubility of, A., 1018.
 mechanism of reduction of, by carbon monoxide, A., 51.
 in lithopone, (P.), B., 597.
 briquettes, (P.), B., 547.
 finely divided, manufacture of, (P.), B., 112.
 high-grade, manufacture of, (P.), B., 588.
 hydrated, composition and solubility product of, A., 565.
 determination of lead in, B., 293.
 oxides, adsorption of hydrogen by, A., 1226.
 sulphate, refractive index of mixed crystals of magnesium sulphate and, A., 547.
 determination of current efficiency in electrolysis of solutions of, B., 848.
 crystalline, manufacture of, (P.), B., 20.
 hydrolysis of solutions of, A., 565, 910.
 separation of, from copper and iron sulphates, (P.), B., 538.
 from sodium sulphate, (P.), B., 247*.
 ammoniate, A., 698.
 persulphate, electrolytic preparation of, A., 178.
 sulphide, manufacture of, (P.), B., 632.
 phosphorescence of, A., 998.
 phosphorescent, preparation of, B., 308.
 action of sulphurous acid on, A., 1255.
 use of, in rubber, B., 1108.
 orthotitanate, A., 289.
 Zinc organic compounds, comparative action of iron halides on, A., 106.
 Zinc cyanides, complex, A., 808.
 tetrapyrindine fluosilicate, A., 1381.
 Zinc detection, determination, and separation :
 detection of, A., 327, 1045.
 determination of, A., 700, 1260, 1261.
 micro-colorimetrically, A., 188.
 in brass, B., 117.
 in foundry practice, A., 1385.
 in presence of lead, A., 453.
 in refractory bodies and slags, B., 491.
 separation of, from cadmium by cyanide method, A., 327.
 from copper, A., 1260.
 Zinc blende. See Blende.
 Zinc dust, production of, (P.), B., 164.
 Zinc ingots, manufacture of, (P.), B., 639.

- Zinc minerals**, occurrence of gallium in, A., 817.
Zinc ores, blast-roasting of, (P.), B., 208.
treatment of, by volatilisation, (P.), B., 27.
purification of, (P.), B., 448, 1104*.
reduction of, (P.), B., 302, 890.
removal of lead or calcium from, (P.), B., 813, 1102.
treatment of flotation concentrates of, preparatory to smelting, B., 1057.
Canadian, treatment of concentrates of, B., 887.
containing lead, flotation of, B., 252.
froth-flotation of, (P.), B., 764.
reduction of, (P.), B., 890.
Australian, flotation of, B., 637.
sulphide, treatment of, (P.), B., 1102.
determination of cadmium in, A., 1024.
Zinc white, manufacture of, (P.), B., 451, 936.
Zinc wire, use of spiral of, as Jones reductor, A., 457.
Zinciferous materials, reduction of, (P.), B., 27.
Zirconium, A., 696.
production of, (P.), B., 121.
recovery of, from zircon, (P.), B., 890.
arc spectrum of, A., 780.
Zirconium, ionised, spectrum of, A., 7, 276.
electrical resistance of, and its mixed crystals with titanium, A., 552.
Zirconium alloys with titanium, resistance of, A., 674.
Zirconium bromides, A., 922.
hydride, crystal structure of, A., 413.
hydroxide, colloidal, as deproteinising agent, A., 662.
dioxide (zirconia), conductance of, A., 894.
melting equilibrium of beryllium oxide with, A., 431.
equilibrium of cerium dioxide with, A., 157.
recovery of, from ores, (P.), B., 1094.
sulphate, A., 322.
Zirconium detection and determination :—
detection of, A., 329, 928.
determination of, with selenious acid, A., 590.
in steel, B., 298.
Zirconium ores, decomposition of, (P.), B., 757.
Zoisite, crystal structure of, A., 415.
Zookinase, A., 984.
Zygadenus gramineus, response of sheep to, A., 651.
Zymin, action of arsenate on induction period of, A., 985.
washed, activation of, A., 263.